

Daily Math

Week 26 (2013-2014)

Monday February 24, 2014

Tuesday February 25, 2014

Wednesday February 26, 2014

Thursday February 27, 2014

Friday February 28, 2014

Monday, February 24, 2014 1st

Expand and simplify:

$$-xy(-y^2 + xy - 3x) + 9x^2(y^2 - 3y + 2)$$

Monday, February 24, 2014

1st

Expand and simplify:

$$-xy(-y^2 + xy - 3x) + 9x^2(y^2 - 3y + 2)$$

Answer:

$$\begin{aligned} & -xy(-y^2 + xy - 3x) + 9x^2(y^2 - 3y + 2) \\ & xy^3 - x^2y^2 + 3x^2y + 9x^2y^2 - 3x^2y + 2x^2 \\ & \quad \mathbf{xy^3 + 8x^2y^2 + 2x^2} \end{aligned}$$

Monday, February 24, 2014

2nd

Factor: $12uv + 30uv^3$

Monday, February 24, 2014

2nd

Factor:

$$12uv + 30uv^3$$

Answer: $12uv + 30uv^3$

$$12uv = 2 \cdot 2 \cdot 3 \cdot u \cdot v$$

$$30uv^3 = 2 \cdot 3 \cdot 5 \cdot u \cdot v \cdot v \cdot v$$

$$2 \cdot 3 \cdot u \cdot v (2 + 5 \cdot v \cdot v)$$

$$6uv(2 + 5v^2)$$

Monday, February 24, 2014 3rd

Find a polynomial expression for the area of a rectangle whose length is $x + 6$ and whose width is $x - 2$.

Monday, February 24, 2014

3rd

Find a polynomial expression for the area of a rectangle whose length is $x + 6$ and whose width is $x - 2$.

Answer: Area = length x width

$$\text{Area} = (x + 6)(x - 2)$$

$$\text{Area} = x(x - 2) + 6(x - 2)$$

$$\text{Area} = x^2 - 2x + 6x - 12$$

$$\text{Area} = x^2 + 4x - 12$$

Monday, February 24, 2014 4th

Find two integers that multiply to 36
and add to 12.

Monday, February 24, 2014

4th

Find two integers that multiply to 36
and add to 12.

Answer:

Factor 1	Factor 2	Sum
1	36	$1 + 36 = 37$
2	18	$2 + 18 = 20$
3	12	$3 + 12 = 15$
4	9	$4 + 9 = 13$
6	6	$6 + 6 = 12$

Monday, February 24, 2014

5th

Evaluate $x^2 y^3 (\sqrt{z})^2$ for $x = -4$, $y = -2$, and $z = 5$

Monday, February 24, 2014

5th

Evaluate $x^2y^3(\sqrt{z})^2$ for $x = -4$, $y = -2$, and $z = 5$

Answer: $x^2y^3(\sqrt{z})^2$

$$(-4)^2(-2)^3(\sqrt{5})^2$$

$$16 \cdot (-8) \cdot 5$$

$$\mathbf{-640}$$

Monday, February 24, 2014

6th

Simplify: $\frac{(vu^2 \cdot 2u^2v^0)^2}{vu^0}$

Monday, February 24, 2014

6th

Simplify: $\frac{(vu^2 \cdot 2u^2v^0)^2}{vu^0}$

Answer: $\frac{(vu^2 \cdot 2u^2v^0)^2}{vu^0} = \frac{(vu^2 \cdot 2u^2 \cdot 1)^2}{v \cdot 1}$

$$\frac{v^2u^4 \cdot 2^2 \cdot u^4}{v} = \frac{4v^2u^8}{v}$$

$$4vu^8$$

Monday, February 24, 2014

7th

Expand and simplify:

$$6(x^2 + y^2) - x(3x + 4y) + y(4x + 3y)$$

Monday, February 24, 2014

7th

Expand and simplify:

$$6(x^2 + y^2) - x(3x + 4y) + y(4x + 3y)$$

Answer:

$$6(x^2 + y^2) - x(3x + 4y) + y(4x + 3y)$$

$$6x^2 + 6y^2 - 3x^2 - 4xy + 4xy + 3y^2$$

$$6x^2 + 6y^2 - 3x^2 - 4xy + 4xy + 3y^2$$

$$3x^2 + 9y^2$$

Tuesday, February 25, 2014

1st

Factor:

$$-60x^3y - 18xy$$

Tuesday, February 25, 2014

1st

Factor:

$$-60x^3y - 18xy$$

Answer: $-60x^3y - 18xy$

$$-60x^3y = -1 \cdot 2 \cdot 2 \cdot 3 \cdot 5 \cdot x \cdot x \cdot x \cdot y$$

$$-18xy = -1 \cdot 2 \cdot 3 \cdot 3 \cdot x \cdot y$$

$$-1 \cdot 2 \cdot 3 \cdot x \cdot y (2 \cdot 5 \cdot x \cdot x - 3)$$

$$-6xy(10x^2 - 3)$$

Tuesday, February 25, 2014 2nd

Find a polynomial expression for the area of a rectangle whose length is $x + 9$ and whose width is $x - 9$.

Tuesday, February 25, 2014

2nd

Find a polynomial expression for the area of a rectangle whose length is $x + 9$ and whose width is $x - 9$.

Find a polynomial expression for the area of a rectangle whose length is $x + 6$ and whose width is $x - 2$.

Answer: Area = length x width

$$\text{Area} = (x + 9)(x - 9)$$

$$\text{Area} = x(x - 9) + 9(x - 9)$$

$$\text{Area} = x^2 - 9x + 9x - 81$$

$$\text{Area} = x^2 - 81$$

Tuesday, February 25, 2014 3rd

Find two integers that multiply to -64
and add to -16.

Tuesday, February 25, 2014

3rd

Find two integers that multiply to -64 and add to -16.

Answer:

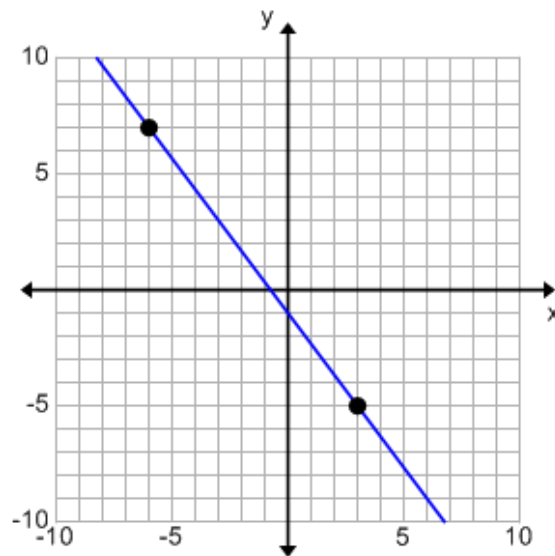
Factor 1	Factor 2	Sum
1	-64	$1 + -64 = -63$
2	-32	$2 + -32 = -30$
4	-16	$4 + -16 = -12$
8	-8	$8 + -8 = 0$
16	-4	$16 + -4 = 12$
32	-2	$32 + -2 = 30$
64	-1	$64 - 1 = 63$

There is no two such integers.

Tuesday, February 25, 2014

4th

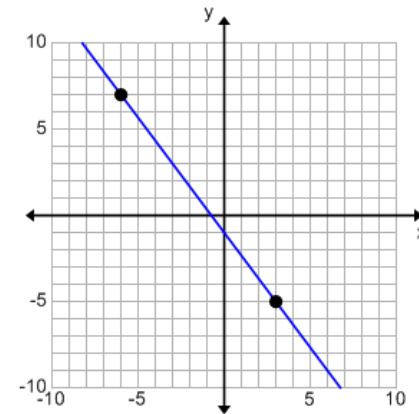
Find the equation of the line shown on the graph.



Tuesday, February 25, 2014

4th

Find the equation of the line shown on the graph.



Answer: $y = mx + b$

$b = -1$ (y-intercept)

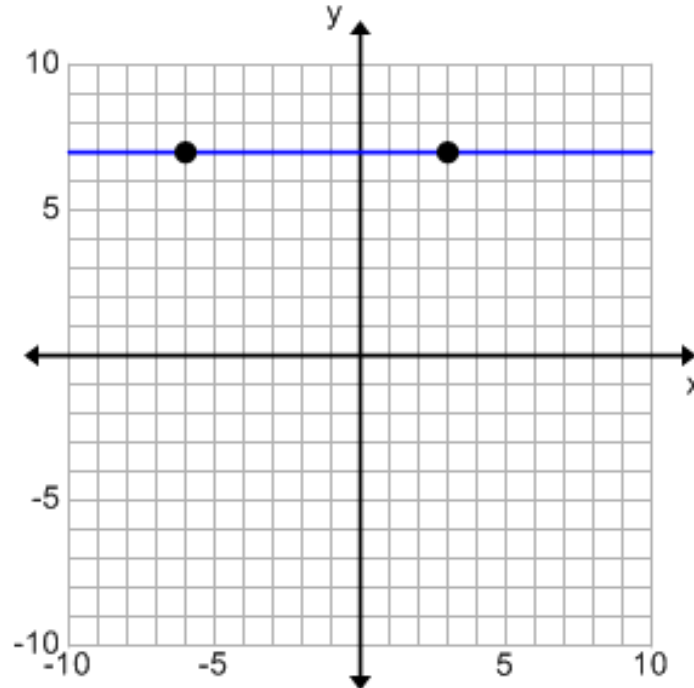
$$m = \frac{\text{rise}}{\text{run}} = \frac{-5-7}{3-(-6)} = \frac{-12}{+9} = -\frac{4}{3}$$

$$y = -\frac{4}{3}x - 1$$

Tuesday, February 25, 2014

5th

Find the equation of the line shown on the graph.



Tuesday, February 25, 2014

5th

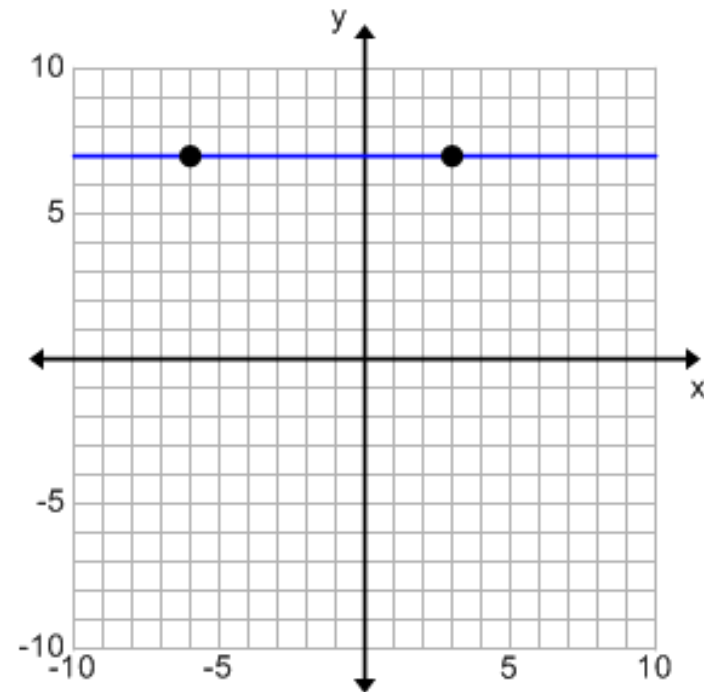
Find the equation of the line shown on the graph.

Answer: $y = mx + b$

$m = 0$ (slope = 0)

$b = 7$

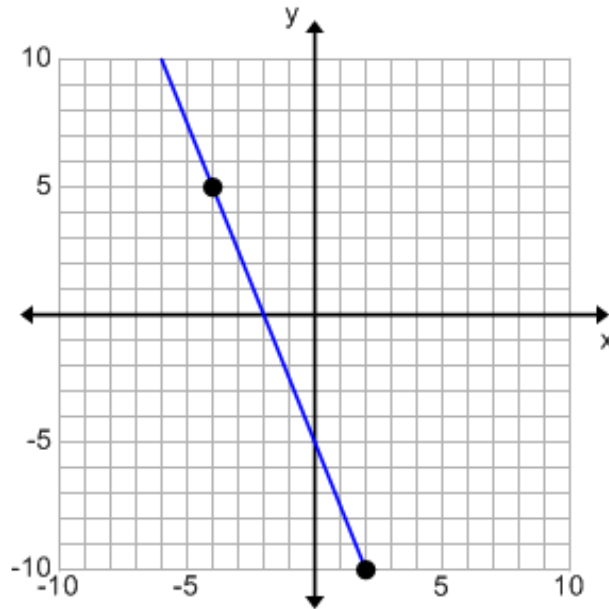
$$y = 7$$



Tuesday, February 25, 2014

6th

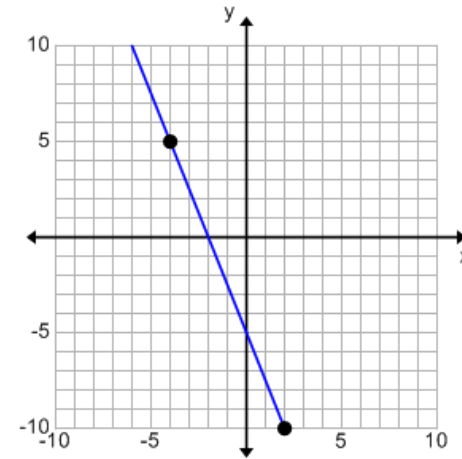
Find the equation of the line shown on the graph.



Tuesday, February 25, 2014

6th

Find the equation of the line shown on the graph.



Answer: $y = mx + b$

$b = -5$ (y-intercept)

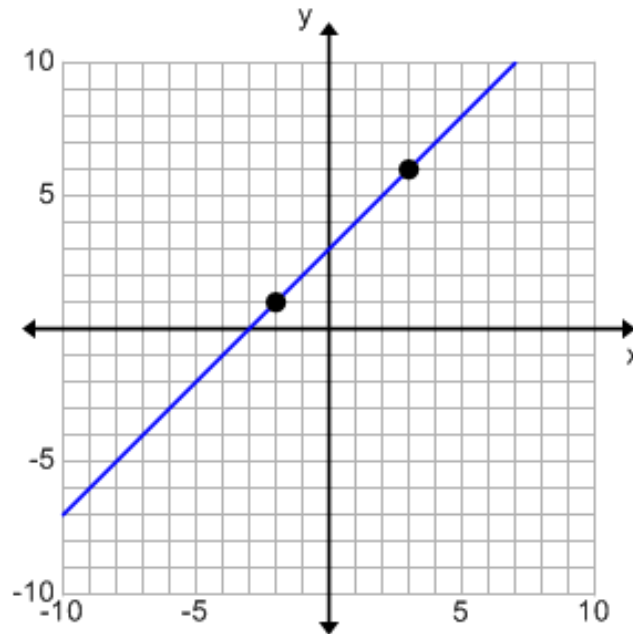
$$m = \frac{\text{rise}}{\text{run}} = \frac{-10 - 5}{2 - (-4)} = \frac{-15}{+6} = -\frac{5}{2}$$

$$y = -\frac{5}{2}x - 5$$

Tuesday, February 25, 2014

7th

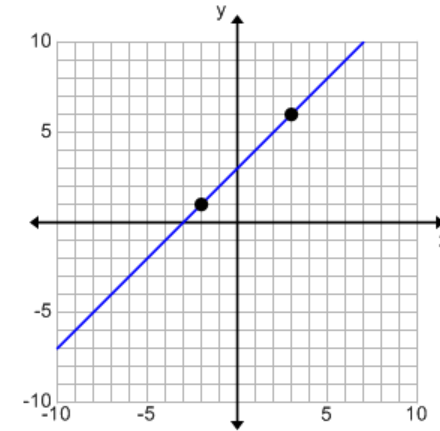
Find the equation of the line shown on the graph.



Tuesday, February 25, 2014

7th

Find the equation of the line shown on the graph.



Answer: $y = mx + b$

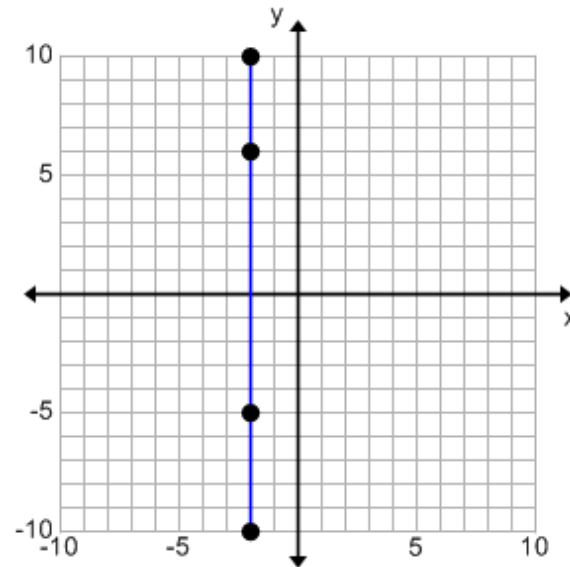
$b = 3$ (y-intercept)

$$m = \frac{\text{rise}}{\text{run}} = \frac{6-1}{3-(-2)} = \frac{5}{5} = 1$$

$$**y = x + 3**$$

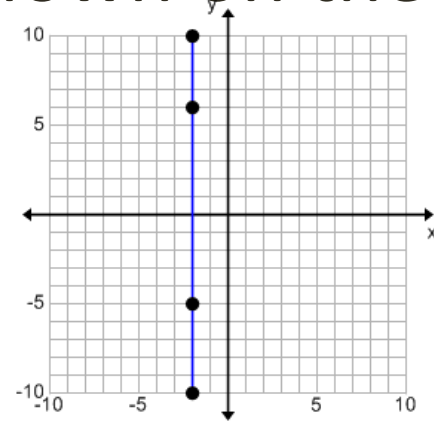
Wednesday, February 26, 2014 1st

Find the equation of the line shown on the graph.



Wednesday, February 26, 2014 1st

Find the equation of the line shown on the graph.



Answer: $y = mx + b$

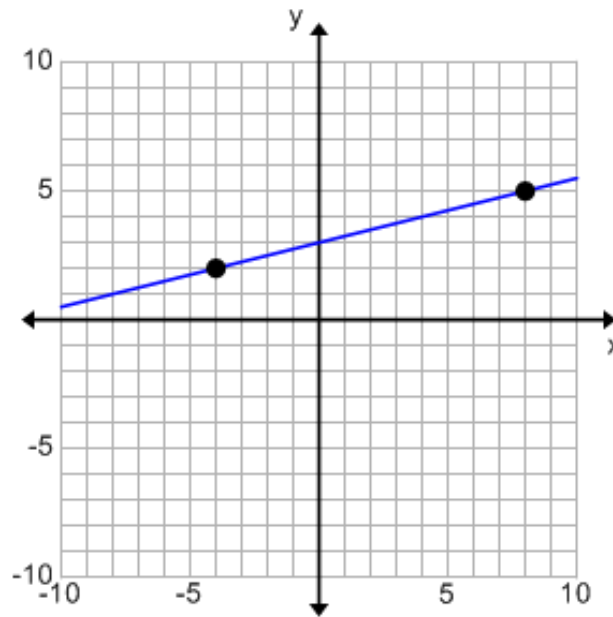
$b =$ doesn't exist (vertical line)

$m =$ undefined (vertical line, run = 0)

$$x = -2$$

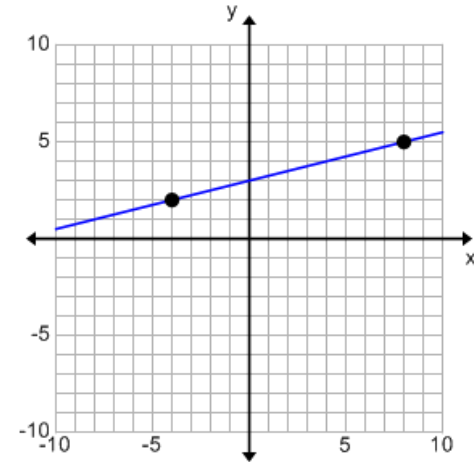
Wednesday, February 26, 2014 2nd

Find the equation of the line shown on the graph.



Wednesday, February 26, 2014 2nd

Find the equation of the line shown on the graph.



Answer: $y = mx + b$

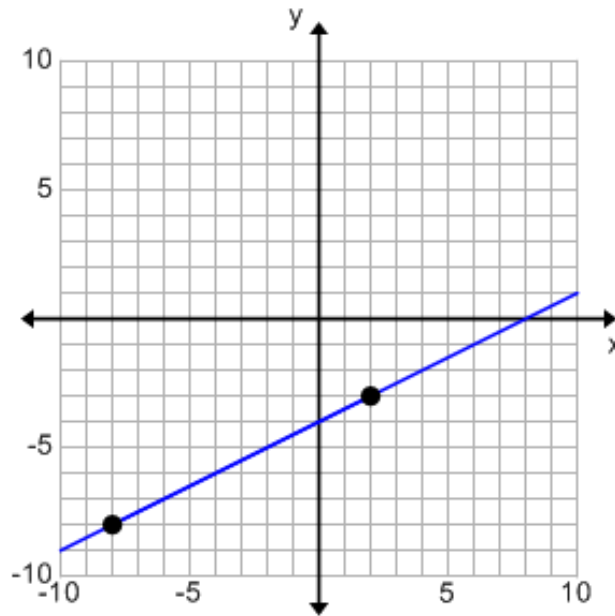
$$b = 3(\text{y-intercept})$$

$$m = \frac{\text{rise}}{\text{run}} = \frac{5-2}{8-(-4)} = \frac{3}{+12} = \frac{1}{4}$$

$$y = \frac{1}{4}x + 3$$

Wednesday, February 26, 2014 3rd

Find the equation of the line shown on the graph.



Wednesday, February 26, 2014 3rd

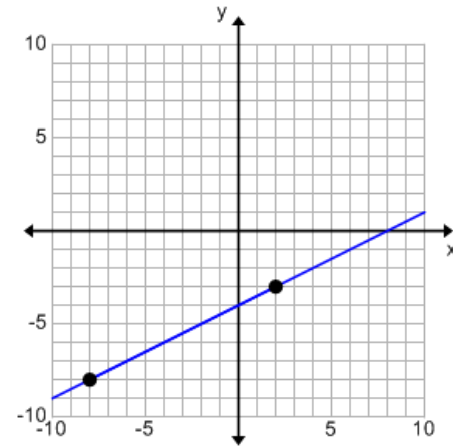
Find the equation of the line shown on the graph.

Answer: $y = mx + b$

$b = -4$ (y-intercept)

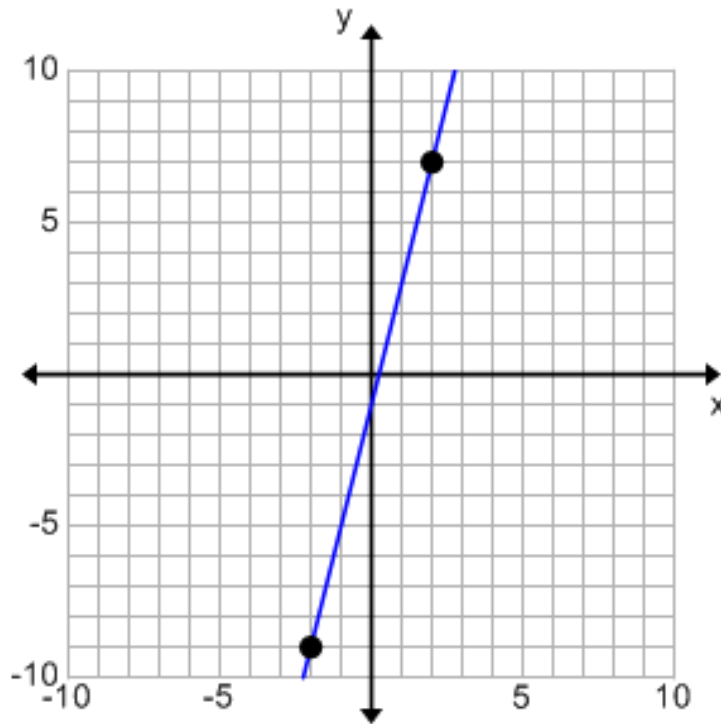
$$m = \frac{\text{rise}}{\text{run}} = \frac{-3 - (-8)}{2 - (-8)} = \frac{+5}{+10} = +\frac{1}{2}$$

$$y = \frac{1}{2}x - 4$$



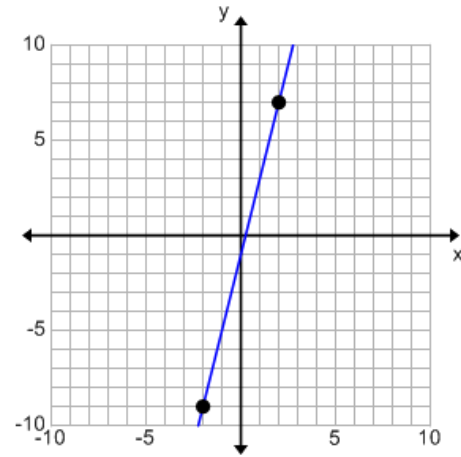
Wednesday, February 26, 2014 4th

Find the equation of the line shown on the graph.



Wednesday, February 26, 2014 4th

Find the equation of the line shown on the graph.



Answer: $y = mx + b$

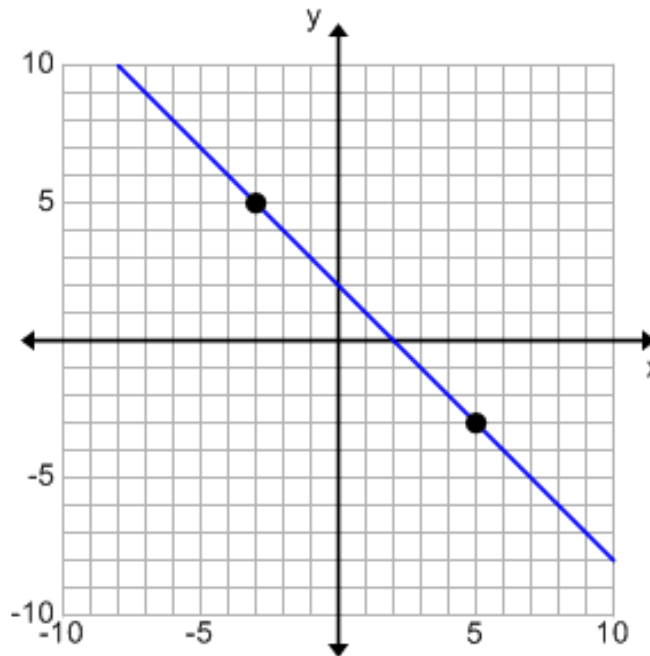
$b = -1$ (y-intercept)

$$m = \frac{\text{rise}}{\text{run}} = \frac{7 - (-9)}{2 - (-2)} = \frac{16}{4} = 4$$

$$**y = 4x - 1**$$

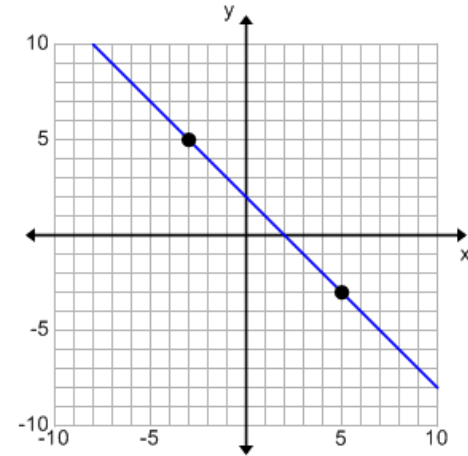
Wednesday, February 26, 2014 5th

Find the equation of the line shown on the graph.



Wednesday, February 26, 2014 5th

Find the equation of the line shown on the graph.



Answer: $y = mx + b$

$$b = 2(\text{y-intercept})$$

$$m = \frac{\text{rise}}{\text{run}} = \frac{-3-5}{5-(-3)} = \frac{-8}{+8} = -1$$

$$y = -x + 2$$

Wednesday, February 26, 2014 6th

Simplify: $\sqrt{72}$

Wednesday, February 26, 2014 6th

Simplify: $\sqrt{72}$

$$\begin{aligned}\text{Answer: } \sqrt{72} &= \sqrt{36 \cdot 2} \\ &= \sqrt{36} \cdot \sqrt{2} \\ &= \mathbf{6\sqrt{2}}\end{aligned}$$

Wednesday, February 26, 2014 7th

Simplify: $\sqrt{20}$

Wednesday, February 26, 2014 7th

Simplify: $\sqrt{20}$

$$\begin{aligned}\text{Answer: } \sqrt{20} &= \sqrt{4 \cdot 5} \\ &= \sqrt{4} \cdot \sqrt{5} \\ &= \mathbf{2\sqrt{5}}\end{aligned}$$

Thursday, February 27, 2014

1st

Simplify: $-\sqrt{32}$

Thursday, February 27, 2014 1st

Simplify: $-\sqrt{32}$

$$\begin{aligned}\text{Answer: } -\sqrt{32} &= -\sqrt{16 \cdot 2} \\ &= -\sqrt{16} \cdot \sqrt{2} \\ &= -4\sqrt{2}\end{aligned}$$

Thursday, February 27, 2014 **2nd**

Simplify: $2\sqrt{98}$

Thursday, February 27, 2014 2nd

Simplify: $2\sqrt{98}$

$$\text{Answer: } 2\sqrt{98} = 2\sqrt{49 \cdot 2}$$

$$= 2\sqrt{49} \cdot \sqrt{2}$$

$$= 2 \cdot 7 \cdot \sqrt{2} = \mathbf{14\sqrt{2}}$$

Thursday, February 27, 2014 3rd

Simplify: $3\sqrt{80}$

Thursday, February 27, 2014 3rd

Simplify: $3\sqrt{80}$

$$\text{Answer: } 3\sqrt{80} = 3\sqrt{4 \cdot 4 \cdot 5}$$

$$= 3\sqrt{16} \cdot \sqrt{5}$$

$$= 3 \cdot 4 \cdot \sqrt{5} = \mathbf{12\sqrt{5}}$$

Thursday, February 27, 2014 **4th**

Simplify: $\sqrt{5} \cdot \sqrt{10}$

Thursday, February 27, 2014 4th

Simplify: $\sqrt{5} \cdot \sqrt{10}$

$$\begin{aligned}\text{Answer: } \sqrt{5} \cdot \sqrt{10} &= \sqrt{5 \cdot 5 \cdot 2} \\ &= \sqrt{25} \cdot \sqrt{2} \\ &= 5 \cdot \sqrt{2} = \mathbf{5\sqrt{2}}\end{aligned}$$

Thursday, February 27, 2014 5th

Simplify: $(-3\sqrt{5}) \cdot (-2\sqrt{5})$

Thursday, February 27, 2014 5th

Simplify: $(-3\sqrt{5}) \cdot (-2\sqrt{5})$

$$\begin{aligned}\text{Answer: } & (-3\sqrt{5}) \cdot (-2\sqrt{5}) \\ & = (-3) \cdot (-2)\sqrt{5 \cdot 5} \\ & = 6 \cdot \sqrt{25} \\ & = 6 \cdot 5 = \mathbf{30}\end{aligned}$$

Thursday, February 27, 2014 **6th**

Simplify: $\sqrt{2} \cdot \sqrt{18}$

Thursday, February 27, 2014 6th

Simplify: $\sqrt{2} \cdot \sqrt{18}$

$$\begin{aligned}\text{Answer: } & \sqrt{2} \cdot \sqrt{18} \\ & = \sqrt{36} \\ & = \mathbf{6}\end{aligned}$$

Thursday, February 27, 2014 **7th**

Simplify: $2\sqrt{8} + 3\sqrt{8}$

Thursday, February 27, 2014 7th

Simplify: $2\sqrt{8} + 3\sqrt{8}$

Answer: $2\sqrt{8} + 3\sqrt{8}$

$$\sqrt{8}(2 + 3)$$

$$5\sqrt{8}$$

$$5\sqrt{4 \cdot 2} = 5\sqrt{4}\sqrt{2}$$

$$5 \cdot 2\sqrt{2} = \mathbf{10\sqrt{2}}$$

Friday, February 28, 2014

1st

Simplify: $5\sqrt{9} - \sqrt{9}$

Friday, February 28, 2014

1st

Simplify: $5\sqrt{9} - \sqrt{9}$

Answer: $5\sqrt{9} - \sqrt{9}$

$$5 \cdot 3 - 3$$

$$15 - 3 = \mathbf{12}$$

Friday, February 28, 2014

2nd

Simplify:

$$2\sqrt{12} + 3\sqrt{12} + 5\sqrt{3}$$

Friday, February 28, 2014

2nd

Simplify:

$$2\sqrt{12} + 3\sqrt{12} + 5\sqrt{3}$$

Answer: $2\sqrt{12} + 3\sqrt{12} + 5\sqrt{3}$

$$5\sqrt{12} + 5\sqrt{3}$$

$$5\sqrt{4 \cdot 3} + 5\sqrt{3}$$

$$5 \cdot 2\sqrt{3} + 5\sqrt{3} = 10\sqrt{3} + 5\sqrt{3}$$

$$**15\sqrt{3}**$$

Friday, February 28, 2014

3rd

Simplify:

$$(-3\sqrt{24}) + (-4\sqrt{24})$$

Friday, February 28, 2014

3rd

Simplify:

$$(-3\sqrt{24}) + (-4\sqrt{24})$$

$$\text{Answer: } (-3\sqrt{24}) + (-4\sqrt{24})$$

$$-7\sqrt{24}$$

$$-7\sqrt{4 \cdot 6}$$

$$-7\sqrt{4}\sqrt{6}$$

$$-7 \cdot 2 \cdot \sqrt{6} = -14\sqrt{6}$$

Friday, February 28, 2014

4th

Simplify:

$$-3\sqrt{48} - 4\sqrt{48} + \sqrt{48}$$

Friday, February 28, 2014

4th

Simplify:

$$-3\sqrt{48} - 4\sqrt{48} + \sqrt{48}$$

Answer: $-3\sqrt{48} - 4\sqrt{48} + \sqrt{48}$

$$-6\sqrt{48}$$

$$-6\sqrt{16 \cdot 3}$$

$$-6\sqrt{16}\sqrt{3}$$

$$-6 \cdot 4 \cdot \sqrt{3} = -24\sqrt{3}$$

Friday, February 28, 2014

5th

Simplify: $(-3b^2)^5$

Friday, February 28, 2014

5th

Simplify: $(-3b^2)^5$

Answer: $(-3b^2)^5$

$$(-3)^5 (b^2)^5$$

$$\mathbf{-243b^{10}}$$

Friday, February 28, 2014

6th

Simplify: $(-3x^5)^2$

Friday, February 28, 2014

6th

Simplify: $(-3x^5)^2$

Answer: $(-3x^5)^2$
 $(-3)^2(x^5)^2$
 $9x^{10}$

Friday, February 28, 2014

7th

Simplify: $(-4)^0(x^3)^4$

Friday, February 28, 2014

7th

Simplify: $(-4)^0(x^3)^4$

Answer: $(-4)^0(x^3)^4$

$1(x^3)^4$

x^{12}