10:06 | Point-Gradient Form

Class: Name:

Examples



The formula $y - y_1 = m(x - x_1)$ is used to find the equation of the line with gradient m through the point (x_1, y_1) .

Find the equation of the line when:

1
$$(x_1, y_1) = (6, 2), m = 3$$

 $\therefore y - 2 = 3(x - 6)$

2
$$(x_1, y_1) = (-1, 5), m = -2$$

 $\therefore y - 5 = -2(x - -1)$

3
$$(x_1, y_1) = (2, -7), m = \frac{3}{4}$$

 $y = -7 = \frac{3}{4}(x - 2)$

$$y - 2 = 3x - 18$$

$$y-5=-2x-2$$

$$4(y+7) = 3(x-2)$$

$$y = 3x - 16$$

$$y = -2x + 3$$

$$4y + 28 = 3x - 6$$

$$(\text{or } 3x - y - 16 = 0)$$

$$(or 2x + y - 3 = 0)$$

$$3x - 4y - 34 = 0$$

in general form)

in general form)



1 Use $y - y_1 = m(x - x_1)$ to find the equation of the line when:

a $(x_1, y_1) = (7, 4), m = 2$

b $(x_1, y_1) = (-1, 3), m = -2$

 $(x_1, y_1) = (2, 3), m = 5$

- d $(x_1, y_1) = (3, -1), m = -3$ $f^{-1}(x_1, y_1) = (-6, -2), m = 4$
- e $(x_1, y_1) = (-2, 0), m = 6$
- $g(x_1, y_1) = (0, 4), m = -3$
- h $(x_1, y_1) = (5, 6), m = \frac{1}{3}$
- i $(x_1, y_1) = (-2, 2), m = 1\frac{1}{4}$
- $j(x_1, y_1) = (4, -7), m = -\frac{3}{5}$

2 Find the equation of the line that:

- a passes through (5,-1) with a gradient of 4
- passes through the origin with a gradient of -3
- passes through (-2, -5) and has a gradient of $2\frac{1}{2}$
- passes through (-5, 0) and has a gradient of $\frac{1}{10}$
- has a slope of -1 and passes through (-3, 4)
- has a gradient of $-\frac{4}{3}$ and passes through (2, 9)

Fun Spot 10:06 | What coat can you put on only when it's wet?

Rearrange each equation into general form (ax + by + c = 0).

Match the answers below with the letters.



c 3x = y + 6

 $\mathbf{F} 3x + y = -6$

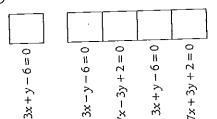
y = 3x + 6

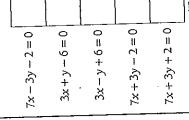
N 3y = 2 - 7x

o 3y = 7x + 2

P 7x = 3y + 2

T 3y = -7x - 2





10:06-Point-Gradient-Form

1 a y=2x-10e y=6x+12i 5x-4y+18=0

2 a y = 4x - 21

e y = -x + 1

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b y = -2x + 1

y = 4x + 22

 $\int 3x + 5y + 23 = 0$

b y = -3x

f 4x + 3y - 35 = 0

d y = -3x + 8y = 5x - 7

y = -3x + 4

c 5x - 2y = 0

h x - 3y + 13 = 0

dx - 10y + 5 = 0