

Algebra One Topics
Expected to Know

1. Equation Solving
2. Systems of equations
3. Exponents
4. Writing equations of functions
5. Graphing functions

1. Equation Solving

A. $6x - 7 = 8x + 31$

$-38 = 2x$

$-19 = x$

B. $3(3x - 7) - 8x = 5 - 2(x + 1)$

$9x - 21 - 8x = 5 - 2x - 2$

$x - 21 = 3 - 2x$

$3x = 24$

$x = 8$

C. $(3x + 2)^2 = 25$

$\sqrt{(3x + 2)^2} = \sqrt{25}$

$3x + 2 = \pm 5$

$3x + 2 = 5$ AND $3x + 2 = -5$

$3x = 3$ $3x = -7$

$x = 1$ AND $x = -\frac{7}{3}$

2. Systems of equations

A. $5x + 8y = 11$ $x = -1$

$2x - 3y = -8$ $y = 2$

B. $x = 5y - 2$
 $2x + 5y = -19$

$x = -7$
 $y = -1$

3. Exponents

(simplify)

A. $x^6 + x^6$

$2x^6$

B. $x^6 - x^6$

0

C. $x^6 (x^6)$

x^{12}

D. $\frac{x^6}{x^6}$

$x^0 = 1$

E. $(x^6)^6$

x^{36}

81
x25
40
162
202

F. $(3x - 2)(2x + 4)$

$6x^2 + 12x - 4x - 8$

$6x^2 + 8x - 8$

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

G. $(3x - 2)^2$

$(3x - 2)(3x - 2)$

$9x^2 - 12x + 4$

H. $(5x)^2(3x^3)^4$

$25x^2 \cdot 81x^{12}$

$2025x^{14}$

I. $2x(4x + 3)^2$

$2x(4x + 3)(4x + 3)$

$2x(16x^2 + 24x + 9)$

$32x^3 + 48x^2 + 18x$

4. Writing equations of functions

A. Write the equation of a line that contains (-3,4) with a slope of 2

$$y - 4 = 2(x + 3) \quad y = 2x + 10$$

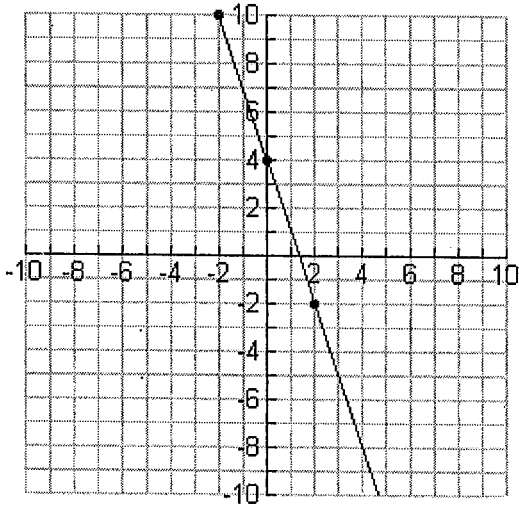
B. Write the equation of a line that contains (4, -7) and (-2, 4)

$$m = \frac{4 - (-7)}{-2 - 4} = \frac{11}{-6}$$

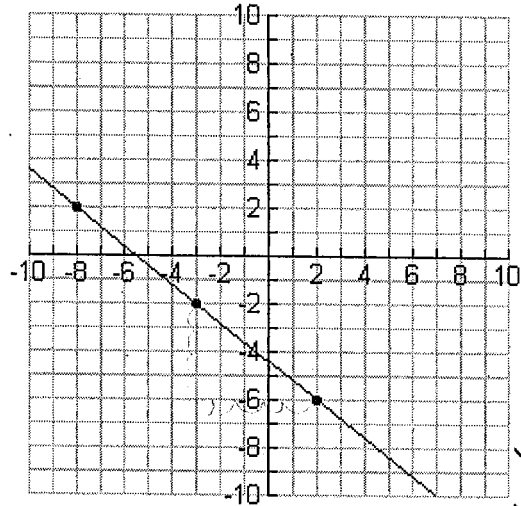
either $y + 7 = \frac{11}{-6}(x - 4)$
or $y - 4 = \frac{11}{-6}(x + 2)$

C. Write the equation of these lines

$$y = -\frac{11}{6}x + \frac{1}{3}$$



$$y = -3x + 4$$



$$y + 6 = -\frac{4}{5}(x - 2)$$

O.R $y = -\frac{4}{5}x + \frac{22}{5}$

$$y = -\frac{4}{5}x + \frac{18 - 30}{5}$$

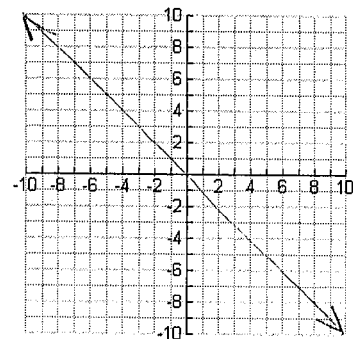
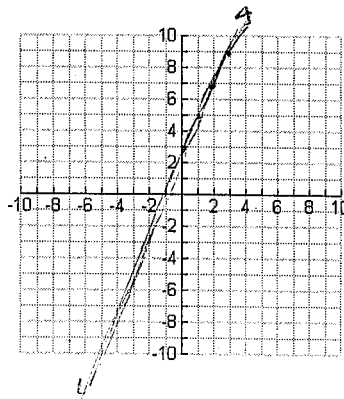
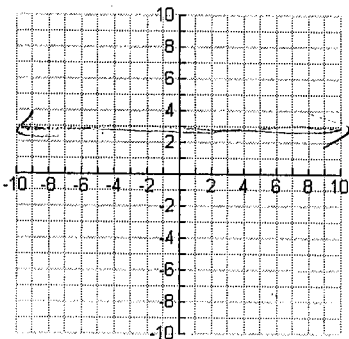
$$y = -\frac{4}{5}x - \frac{22}{5}$$

5. Graphing functions

A. $y = 3$

B. $y = 2x + 3$

C. $y = -x$



D. Give the x and y intercepts for the function in B

x int: $(-\frac{3}{2}, 0)$ \rightarrow why? $\rightarrow 0 = 2x + 3$
 $-3 = 2x$
 $-\frac{3}{2} = x$
 y int: $(0, 3)$