

Solve for x by Factoring

1) $8x^3 = 38x^2 + 10x$

2) $50x = 72x^3$

Factored Form: _____

Factored Form: _____

Solution: _____

Solution: _____

3) Identify any intercepts (if any) and test for symmetry $y^2 = x^3 - 16x$

x-intercept(s): _____ y-intercept: _____ Symmetry: _____

4) Identify the type(s) of symmetry for: $5x^3y^4 + 3x^7y^6 - 12x = 0$

5) Find the point(s) of intersection (ordered pairs!) of the graphs of the equations:

$$x^2 + y^2 = 9$$

$$x + y = 3$$

Slope $m = \frac{y_2 - y_1}{x_2 - x_1}$

slope-intercept form: $y = mx + b$

point-slope form: $y - y_1 = m(x - x_1)$

6) Find an equation of the line (point-slope form) that passes through the points $(0, -2)$ and $(3, 3)$

7) Find an equation of the line (point-slope form) containing the point $(-5, 2)$ that is perpendicular to the line $-8x + 5y = 19$

8) Find an equation of the line (point-slope form) containing the point $(-5, 1)$ that is parallel to the line $5x - 2y + 11 = 0$

9) Write an equation of the line that passes through $(-4, 3)$ and is perpendicular to the line $y = 1$

10) Write an equation of the line that passes through $(1, -2)$ and is parallel to the line $y = -2$

Key

Solve for x by Factoring

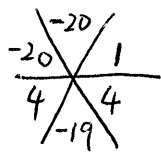
1) $8x^3 = 38x^2 + 10x$

$$8x^3 - 38x^2 - 10x = 0$$

$$2x(4x^2 - 19x - 5) = 0$$

$$2x(x-5)(x+1/4) = 0$$

$$2x(x-5)(4x+1) = 0$$



2) $50x = 72x^3$

$$50x - 72x^3 = 0$$

$$2x(25 - 36x^2) = 0$$

$$\begin{matrix} \wedge & \wedge \\ 5 & 5 & 6x & 6x \end{matrix}$$

$$2x(5-6x)(5+6x) = 0$$

Factored Form: $2x(x-5)(4x+1)$

Solution: $x = 0, 5, -1/4$

Factored Form: $2x(5-6x)(5+6x)$

Solution: $x = 0, -5/6, 5/6$

3) Identify any intercepts (if any) and test for symmetry $y^2 = x^3 - 16x$

$$0 = x^3 - 16x$$

$$0 = x(x^2 - 16)$$

$$0 = x(x-4)(x+4)$$

$$y^2 = 0 - 0$$

$$y = 0$$

x-intercept(s): $x = 0, 4, -4$ y-intercept: $(0, 0)$ Symmetry: x-axis, origin
 $(0, 0), (4, 0), (-4, 0)$

4) Identify the type(s) of symmetry for: $5x^3y^4 + 3x^7y^6 - 12x = 0$

x-axis and origin symmetry

5) Find the point(s) of intersection (ordered pairs!) of the graphs of the equations:

$x^2 + y^2 = 9$ $x + y = 3$ $y = 3 - x$	$x^2 + (3-x)^2 = 9$ $x^2 + (3-x)(3-x) = 9$ $x^2 + 9 - 3x - 3x + x^2 = 9$ $2x^2 - 6x = 0$ $2x(x-3) = 0$ $x = 0, 3$	$*x + y = 3$ $0 + y = 3$ $y = 3$ <div style="border: 1px solid black; padding: 5px; display: inline-block;">$(0, 3)$</div>	$x + y = 3$ $3 + y = 3$ $y = 0$ <div style="border: 1px solid black; padding: 5px; display: inline-block;">$(3, 0)$</div>
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Slope $m = \frac{y_2 - y_1}{x_2 - x_1}$

slope-intercept form: $y = mx + b$

point-slope form: $y - y_1 = m(x - x_1)$

- 6) Find an equation of the line (point-slope form) that passes through the points (0, -2) and (3, 3)

$$m = \frac{3 - (-2)}{3 - 0}$$

$$m = \frac{5}{3}$$

point: (3, 3)
slope: $m = \frac{5}{3}$

$$y - 3 = \frac{5}{3}(x - 3)$$

or

$$y + 2 = \frac{5}{3}(x - 0)$$

- 7) Find an equation of the line (point-slope form) containing the point (-5, 2) that is perpendicular to the line $-8x + 5y = 19$

$$5y = 8x + 19$$

$$y = \frac{8}{5}x + \frac{19}{5}$$

$$m = \frac{8}{5}$$

$$m_2 = -\frac{5}{8}$$

point: (-5, 2)

$$y - 2 = -\frac{5}{8}(x + 5)$$

- 8) Find an equation of the line (point-slope form) containing the point (-5, 1) that is parallel to the line

$$5x - 2y + 11 = 0$$

$$-2y = -5x - 11$$

$$y = \frac{-5}{-2}x - \frac{11}{-2}$$

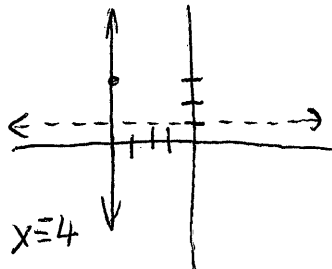
$$y = \frac{5}{2}x + \frac{11}{2}$$

$$m = \frac{5}{2}$$

point: (-5, 1)

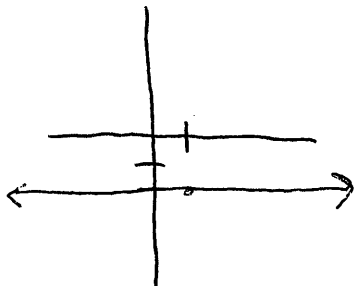
$$y - 1 = \frac{5}{2}(x + 5)$$

- 9) Write an equation of the line that passes through (-4, 3) and is perpendicular to the line $y = 1$



$$x = -4$$

- 10) Write an equation of the line that passes through (1, -2) and is parallel to the line $y = -2$



$$y = -2$$