

College Precalculus Honors

Summer Assignment 2026

- This summer assignment is meant to ensure you have down the essential skills needed to enter this course. This assignment should take a few hours and should be spread out throughout the summer. Do not wait until the last minute to start.
- This assignment will be collected the first day of classes on Wednesday 9.2.26. Test on summer assignment will be on Friday 9.4.26
- If you have any questions, feel free to email me at gthornton@pmschools.org

1. Transform the given function $f(x)$ as described and write the resulting function as an equation.

(a) $f(x) = x^3$ Compress horizontally by a factor of 2, translate right 2 units

(b) $f(x) = |x|$ Reflect across the x -axis, translate up 2 units

(c) $f(x) = \sqrt{x}$ Stretch vertically by a factor of 3, translate up 1 unit, translate left 3 units

2. If $p(x) = x^3 + 5x^2$, find:

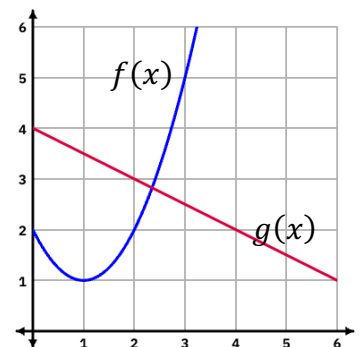
(a) $p(-8)$

(b) $p(x + 1)$

3. Given the graphs of f and g in the image to the right, find:

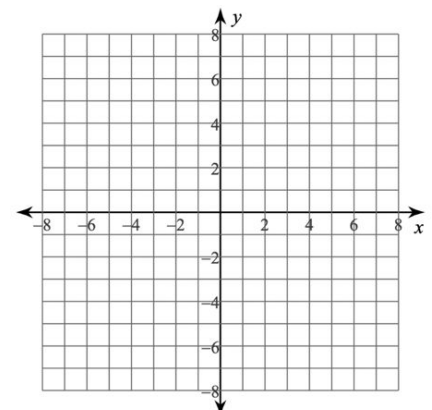
(a) $f(3) + g(2)$

(b) $\frac{g(1)}{f(2)}$



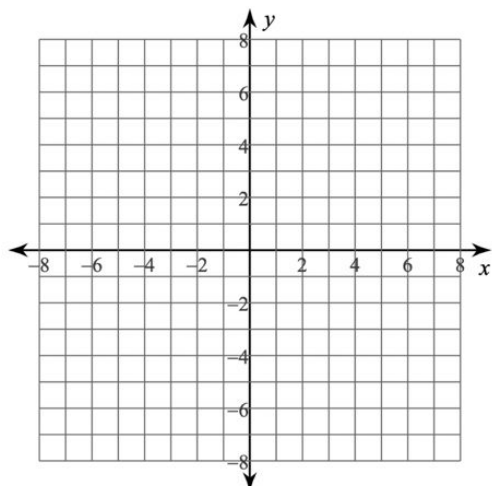
4. Graph the piecewise-defined function $f(x)$ on the coordinate grid to the right.

$$f(x) = \begin{cases} x - 1 & x \leq -3 \\ 4 - x^2 & -3 < x < 3 \\ \sqrt{x - 4} & x \geq 3 \end{cases}$$

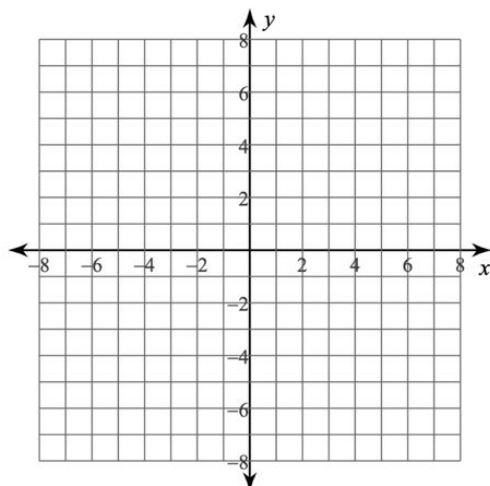


1. Graph the linear function or inequality.

(a) $x + 2y = 2$



(b) $y < -\frac{8}{3}x - 3$

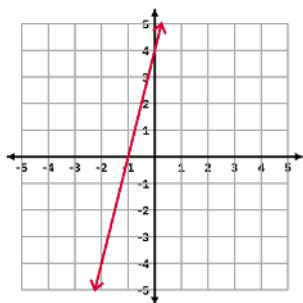


2. Solve the system of linear equations using substitution or elimination.

$$\begin{cases} x = y + 3 \\ -y + 3 = -7x \end{cases}$$

3. Given each set of information below, write the linear equation in slope-intercept form.

(a)



(b) Point-slope form: $y - 1 = \frac{6}{5}(x - 5)$

(c) passes through $(-5, -1)$ and $(0, 2)$

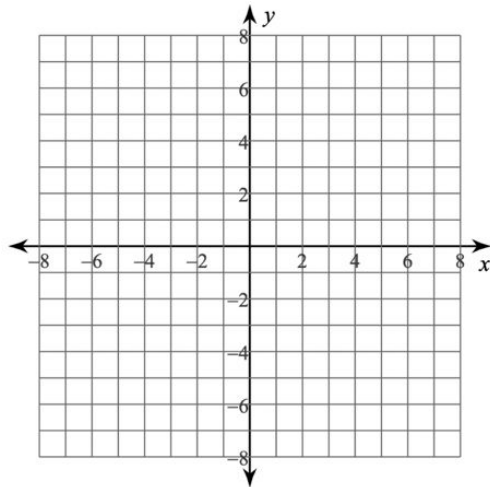
(d) Passes through $(-1, -5)$ and is perpendicular to the line $y = -\frac{1}{7}x - 5$

QUADRATIC FUNCTIONS

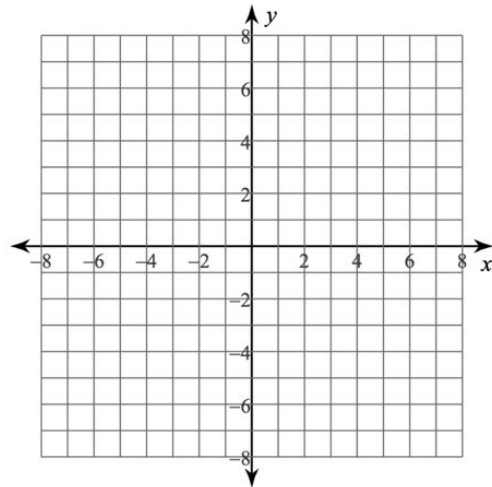
TOPIC C

1. Identify the vertex and axis of symmetry of each quadratic function. Then graph the function. Your graph should include the vertex, axis of symmetry, and four other key points.

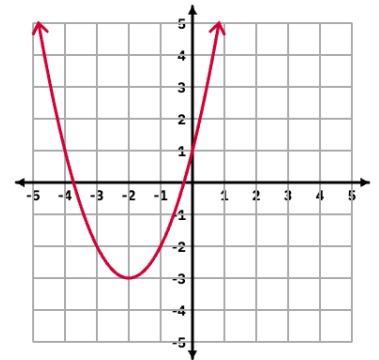
(a) $y = -x^2 + 2x + 3$



(b) $y = 2(x + 1)^2 - 2$



2. Write the equation of the quadratic function graphed to the right.



3. Solve each equation below using the requested method. Leave your answers in exact form (do not approximate to a decimal.)

(a) $10n^2 + 4 = 414$
Square Root Method

(b) $x^2 - 140 = 4x$
Quadratic Formula

1. Factor each completely.

(a) $x^2 + 4x - 60$

(b) $n^2 - 12n + 32$

(c) $28r^2 + 16r$

(d) $8x^2 + 89x + 90$

(e) $16a^4 - 49$

(f) $15x^3 + 24x^2 - 20x - 32$

(g) $2x^2 - 21x + 40$

(h) $b^3 + 8$

(i) $4r^2 - 4r + 1$

2. Solve each equation by factoring. Leave your answers in exact form (do not approximate to a decimal).

(a) $4x^2 - 96 = 20x$

(b) $x^2 + 3x = 40$

(c) $(4v - 3)(2v + 3) = 0$

(d) $41m^2 - 9m - 28 = 6m^2 + 4 + 3m$

1. Perform the fraction operation. Leave your answer as an improper fraction.

(a) $\frac{2}{9} + \frac{1}{3} =$

(b) $2\frac{1}{3} + 1\frac{2}{5} =$

(c) $\frac{3}{4} - \frac{5}{8} =$

(d) $\frac{8}{3} - \frac{9}{5} =$

(e) $\frac{1}{5} \cdot \frac{2}{9} =$

(f) $\frac{8}{9} \times \frac{10}{14} =$

(g) $\frac{7}{12} \div \frac{8}{10} =$

(h) $\frac{\frac{10}{11}}{\frac{2}{5}} =$

2. Simplify each expression as a single fraction.

(a) $\frac{8x}{3} + \frac{x-2}{9} =$

(b) $\frac{5x}{7} - \frac{x-3}{3} =$

(c) $\frac{7x-9}{2} + \frac{5x+6}{5} + \frac{x}{6} =$

(d) $\frac{3(x-1)}{7} - \frac{7x-8}{6} =$

1. Simplify. Your answer should only contain positive exponents.

(a) $4n^4 \cdot 2n^{-3}$

(b) $2^2 \cdot (2^3)^{-3}$

(c) $\frac{2^{-2} \cdot 2^4}{(2^0)^0} =$

(d) $\frac{3m^{-4}}{m^3}$

(e) $(2yx^3(x^{-4}y^3)^{-4})^{-2} =$

(f) $\frac{2u^{-3}v^2 \cdot u^2v^{-2}}{(2u^2v^2)^4} =$

(g) $(125n^3)^{2/3}$

(h) $\frac{x^{1/2}\sqrt{x}}{x^{-2}y^{-7/4}} =$

1. Solve each equation or inequality using an algebraic method.

(a) $5(2x - 1) + 3 = 2x - 4(x + 1)$

(b) $\sqrt{3x - 2} = x - 2$

(c) $3|x - 2| = 6$

(d) $2x^3 - 9x^2 + 9x = 0$

(e) $\frac{4x - 5}{x + 2} = \frac{1 - 5x}{x + 6}$

(f) $-9 < 4x + 1 < 13$

(g) $81p^4 - 18p^2 + 1 = 0$

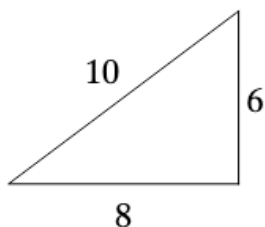
(h) $\sqrt[3]{y^2 - 12y} = 4$

RIGHT TRIANGLE TRIGONOMETRY

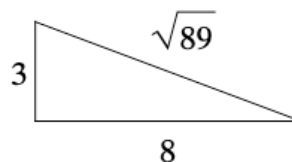
TOPIC H

1. Use the Pythagorean Theorem to determine if each triangle below is a right triangle.

(a)

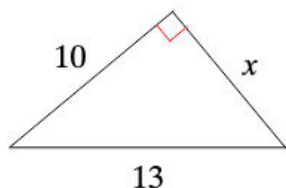


(b)

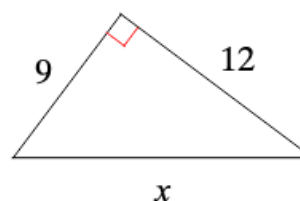


2. Use the Pythagorean Theorem to find the missing side length in each right triangle below.

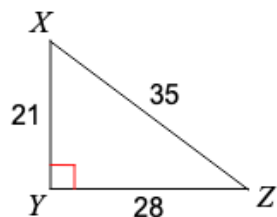
(a)



(b)



3. Use the triangle below to find the value of each trigonometric ratio.



(a) $\sin X =$

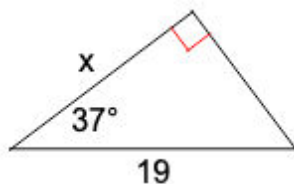
(b) $\tan Z =$

(c) $\cos Z =$

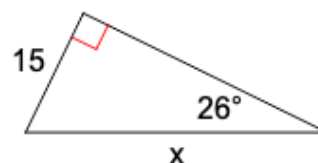
(d) $\tan X =$

4. Find the missing side length in each triangle below. Round to the nearest tenth. You will need to use a calculator - make sure it is in degree mode!

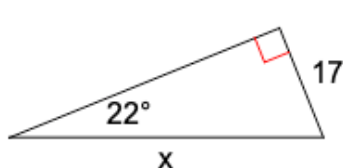
(a)



(b)



(c)



(d)

