

3) Determine the coordinates of the vertex for the function $f(x) = -2x^2 + 12x + 7$ using any method. State if the vertex is a minimum or a maximum. [2]

4) Suppose $f(x) = 2\sqrt{x} + 3$. Find $f(8)$ and simplify. Express your answer as a fully simplified radical and show all steps. [1]

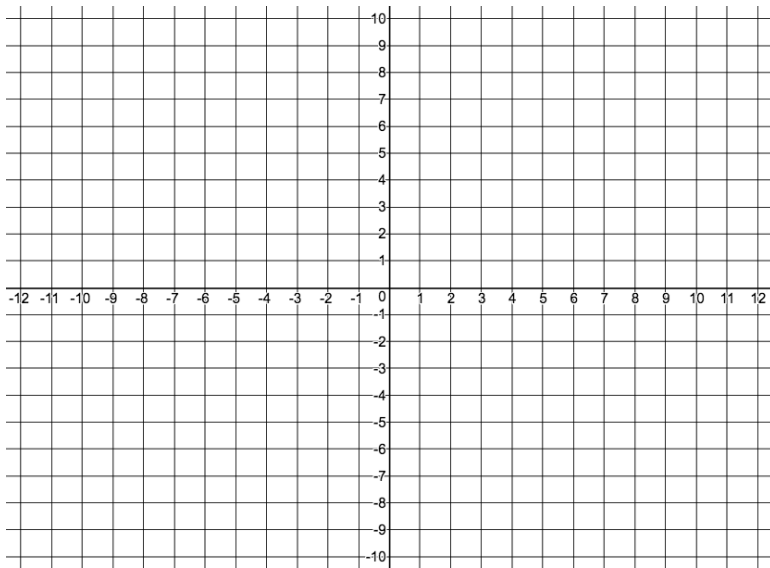
5) Solve each quadratic by factoring [4]

a) $f(x) = x^2 + 7x + 12$

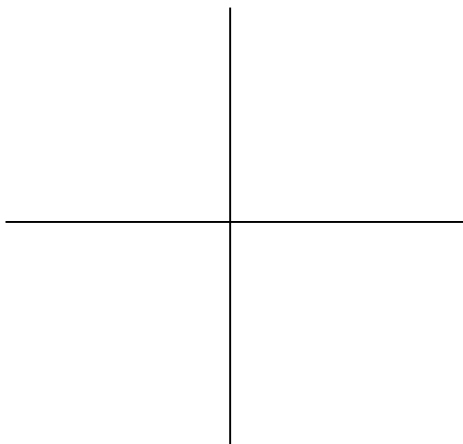
b) $f(x) = 3x^2 - 4x - 15$

6)a) List the transformations in words for the following function $g(x) = -\frac{1}{2}f\left[\frac{1}{3}(x-1)\right] + 7$ [4]

b) Using the transformation function above, $g(x) = -\frac{1}{2}f\left[\frac{1}{3}(x-1)\right] + 7$, transform and graph the function $f(x) = x^2$. Graph both the parent function, $f(x)$, and the transformed function, $g(x)$, and show your calculations. [4]



7) Find the exact values of $\cos 240^\circ$ using the special triangles and the CAST rule. Show the angle in standard position and show as much work as you can to explain your solving process. Do not use a calculator. [2]



8) Find BOTH angle measurements for θ , where $0^\circ \leq \theta \leq 360^\circ$, if $\sin\theta = 0.43837$. You will need to use your calculator in degree mode. Show your work and round to the nearest whole degree. [2]

9) For the transformed function $y = 4 \cos[3(x - 20^\circ)] + 5$ state the amplitude, the period, the phase shift and the vertical shift of the function with respect to the parent function, also state the maximum and minimum values of the function. [3]

Note: be sure to indicate the direction of the phase shift and vertical shift!

Amplitude =

Period =

Phase shift =

Vertical Shift =

Maximum Value =

Minimum Value =

10) Write the equations of a sine function and a cosine function to match the graph. [2]

