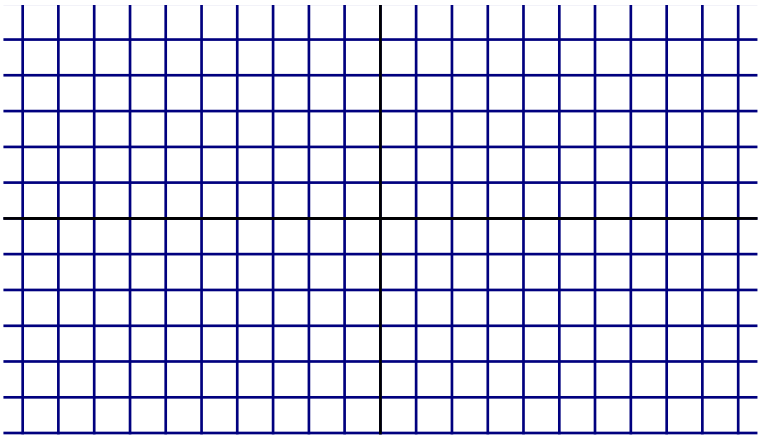
Chapter 1 Test **August 30, 2012** **Name**

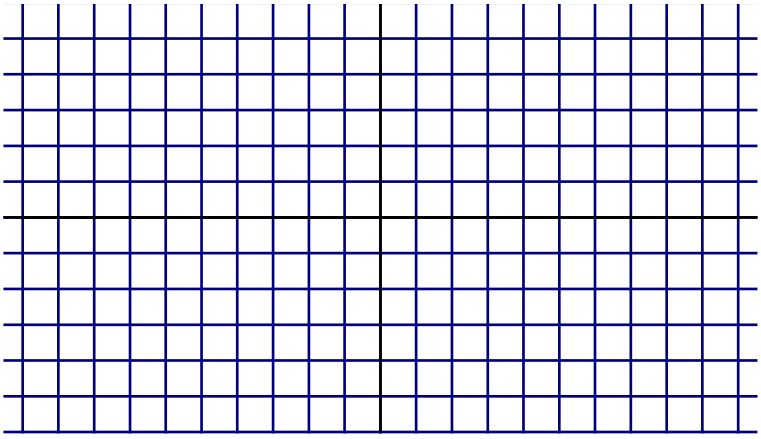
1. Find the equation of the line, in General (or Standard) Form, for the line that is *perpendicular* to the line $-3x + 4y = 12$, and passes through the point $(-2, 3)$.

2. Draw a graph of the function $y = -|x^2 + 3x|$, clearly showing the scale on each of the axes, and labeling three points.

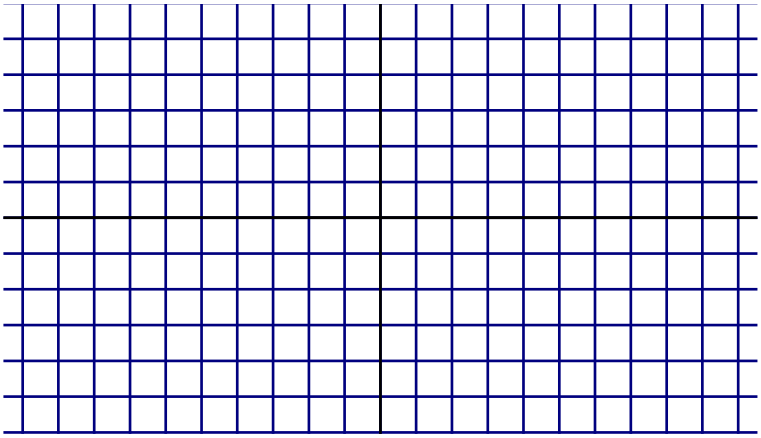


3. Find the value of k that will make the following two lines *parallel*: $kx = 3y + 2$, and $5y + 4x + 7 = 0$

4. Draw a graph of the function $y = 2\sin(3x - 2\pi)$, clearly showing the scale on each of the axes, and labeling three points.

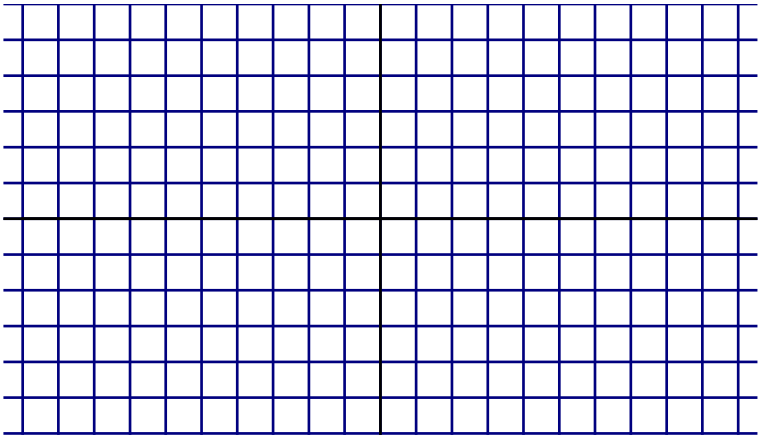


5. Draw a graph of the function $y = -\log_3(x - 2) + 1$, clearly showing the scale on each of the axes, and labeling two points.



6. If $f(x) = \dfrac{1}{1 - x}$ and $g(x) = \dfrac{1}{3x + 2}$, find $g(f(x))$, and indicate the domain and range.

7. Draw a graph of the function $y = -2\left(2^{1-x}\right)$, clearly showing the scale on each of the axes, and labeling two points.

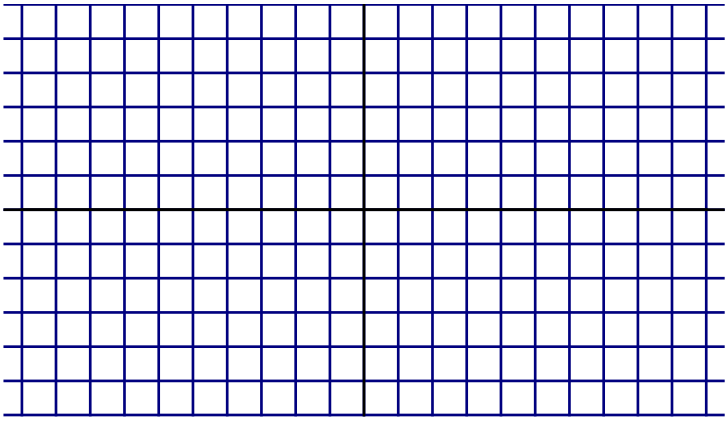


8. Solve the equation $12\left(2^{x}\right) + 6\left(2^{-x}\right) = 17$

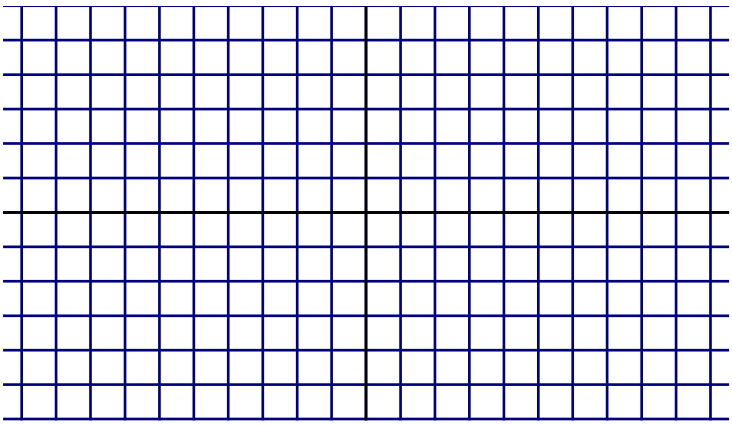
9. Usain Bolt is chosen as the "Humble Athlete of the Year", and is awarded $\$80,000$. He wisely chooses to put the money in an interest bearing account. How much money will be in the account 30 years later, if it earns 3% interest, compounded continuously?

10. Find $f^{-1}(x)$ if $f(x) = \dfrac{2x - 1}{x + 3}$, then verify that $f\left(f^{-1}(x)\right) = x$

11. Graph the following parametrically defined plane curve, clearly showing the scale on each of the axes and indicating the orientation. $x = \sqrt{9 - (t - 2)^2}$, $y = t - 2$, $0 < t < 5$



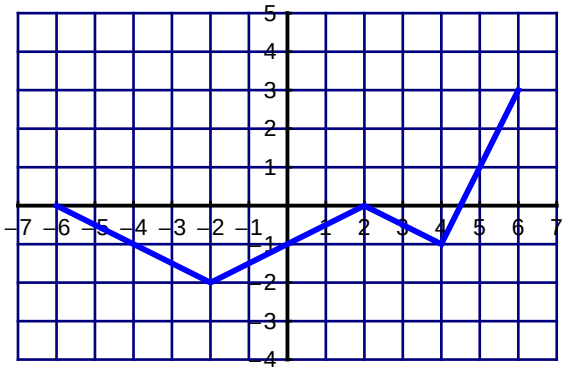
12. Draw a sketch of the curve $y = -\cot\left(x - \dfrac{\pi}{3}\right) + 1$, clearly showing the scale on each of the axes, and labeling two points.

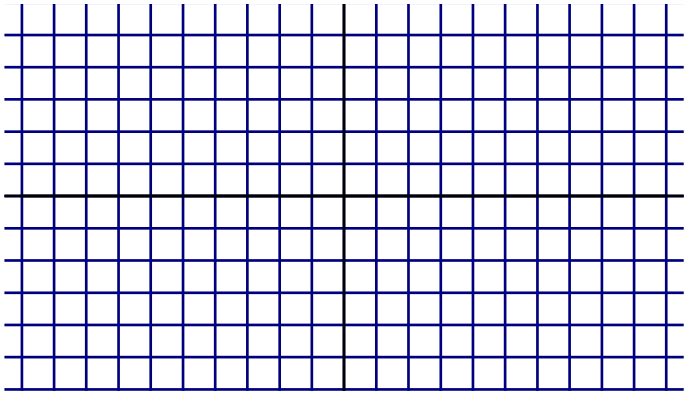


13. Solve the following equation for x. $\frac{9}{4}\left(2^{4x}\right) = 27\left(3^{3x}\right)$

14. Solve the following equation for y, $\log_2(x + 3) + 7 - \log_2\left(x^2\right) = \log_2 9 - 5x - \log_2(4 + y)$

15. The graph of $f(x)$ **is shown. Draw the graph of** $-f(2x + 8)$, **clearly showing the scale on each of the axes.**





16. Find the six trigonometric ratios at θ **if** $\theta = \tan^{-1}\left(\frac{-16}{12}\right)$