

Math& 142 (Pre-Calculus 2 (Trig)) Entrance Exam Review - Sample

Use this sample to help determine your placement. The Entrance Exam Review is online at: <http://www.wamap.org/diag> (click on GRCC Entrance Exam Review). Password is: grccee. Entrance Exams are administered in the GRCC Assessment Center (ZWC building). The exams are online utilizing the WAMAP system.

- 1) Evaluate the expression, reduce to simplest terms
 $\log 2^5 + \log 5^5$
- 2) Given that $f(x) = x^2 - 12x$ and $g(x) = x + 7$, find $(f + g)(x)$
- 3) Find the inverse for each of the following functions.

$$f(x) = 10x + 5$$

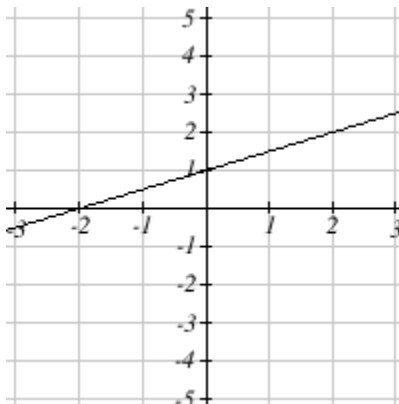
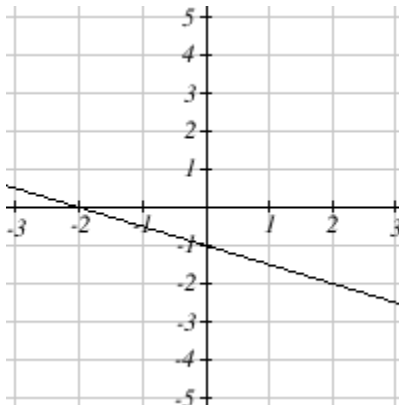
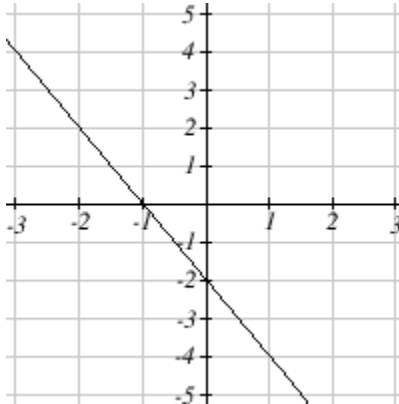
$$g(x) = \frac{5}{x + 3}$$

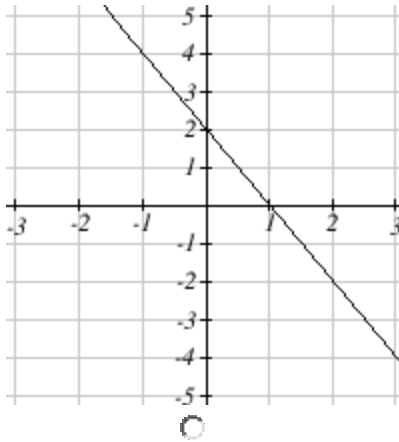
- 4) The graph of the function $f(x) = 7^x - 4$ can be obtained from the graph of $g(x) = 7^x$ by shifting the graph of $g(x)$:
A. right 4 units B. left 4 units C. upward 4 units D. downward 4 units
- 5) Solve the equation
 $3^{x-7} = 3^{5x+4}$
- 6) Put the equation $y = x^2 + 22x + 112$ into the form $y = (x + h)^2 + k$ by completing the square.
- 7) A bacteria culture initially contains 1500 bacteria and doubles every half hour. The size of the population is modeled by $p(t) = 1500e^{kt}$ for some constant k . (You will need to find k to answer the following question.) What is the size of the population after 5 hours?
- 8) Find a formula for the exponential function passing through the points $\left(-1, \frac{5}{4}\right)$ and $(3, 320)$
- 9) The population of the world in 1987 was 5 billion and the annual growth rate was estimated at 2 percent per year. Assuming that the world population follows an exponential growth model, find the projected world population in 1999.

10) Solve for x :

$$x^2 + 15x + 50 = 0$$

11) Which of the following is a graph of the inverse of $y = -0.5x + 1$?





- 12) Find the equation for the cubic function, $f(x)$, with roots at -2 , 6 and -5 , and has a y -intercept at $(0, 13)$.
- 13) Find the average rate of change of the function $f(x) = -1x^2 + 3x + 4$ from $x = 2$ to $x = 5$.
- 14) Find the formula for the linear function $f(x)$ such that $f(-3) = -2$ and $f(3) = 3$
- 15) Write an equation for a line perpendicular to $y = 3x - 2$ and passing through the point $(-9, -2)$

16) Let $f(x) = \frac{5}{x^2 - 5}$ and evaluate $f(a + 3)$. Simplify your answer completely.

- 17) Find all values of the variable x for which the rational expression is undefined.

$$\frac{7x + 10}{x^2 + 9x + 14}$$

18) Given the function, $f(x) = \begin{cases} -2x^2 + 6, & \text{for } x < -2 \\ -4, & \text{for } -2 \leq x \leq 1 \\ 1 - \sqrt{x}, & \text{for } x > 1 \end{cases}$, calculate $f(-4)$

19) Find the domain of the function $f(x) = \sqrt{10 + 3x - x^2}$

- 20) Given $f(x) = x^2$, after performing the following transformations: shift upward 8 units and shift 37 units to the right, give the new function $g(x)$

