

(1-2) Perform the indicated operations and simplify. Write your answer with no negative exponents.

(5 pts.) 1.) $2 - 3\{x + 2[x - (x + 5)] + 1\}$

(5 pts.) 2.) $\left(\frac{-2x^{-3}y}{x^2y^3}\right)^{-2}$

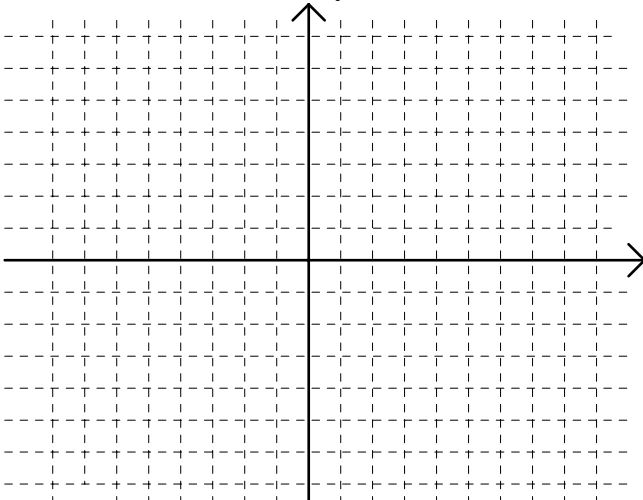
(3 pts.) 3.) Solve for x and graph your solution: $-2x + 5 < 11$

(5 pts.) 4.) Find all the real solutions of the following using any method you wish: $8x^2 + 2x = 15$

(7 pts.) 5.) If $g(x) = 3x^2 + 2$ find and simplify: $\frac{g(2+h) - g(2)}{h}$

(8 pts.) 6.) Graph $f(x) = 2\left(\frac{1}{2}\right)^x$ Label at least one tick

mark on each axis so that your scale is obvious.



(4 pts.) 7.) Solve for x : $7^{x^2} = 7^{2x+3}$

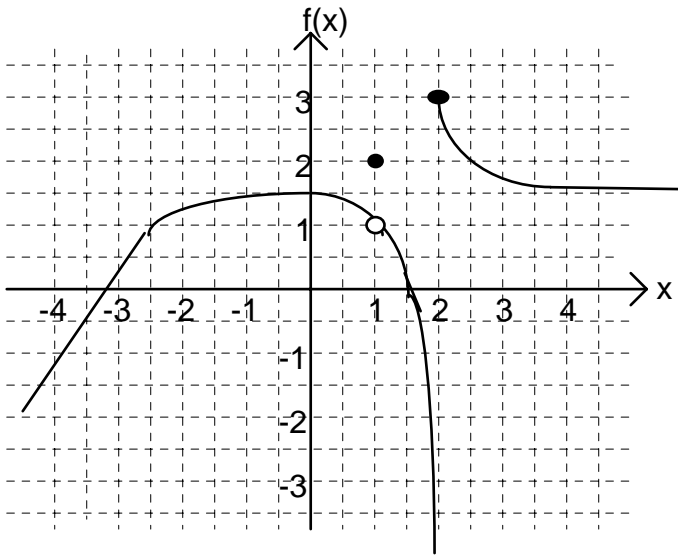
(4 pts.) 8.) Simplify: $(e^x - e^{-x})^2$

(4 pts.) 9.) Solve for x : $\log_b x = \frac{1}{4} \log_b 16 - \frac{1}{2} \log_b 9$

(3 pts.) 10.) Find x to six decimal places: $\log x = -3.0672$

(2 pts.) 11.) Use your calculator to find $\log_5 30$. Round off at the 3rd decimal place.

(22 pts.) 12.) Use the graph in the picture to evaluate the following (Use ∞ or $-\infty$ where appropriate. Use d.n.e. for does not exist.) (2 pts. each)



(a.) $f(0) =$

(b.) $f(1) =$

(c.) $f(2) =$

(d.) $f(3) =$

(e.) $\lim_{x \rightarrow 1} f(x) =$

(f.) $\lim_{x \rightarrow 2^-} f(x) =$

(g.) $\lim_{x \rightarrow 2^+} f(x) =$

(h.) $\lim_{x \rightarrow 0} f(x) =$

(i.) $\lim_{x \rightarrow \infty} f(x) =$

(j.) $\lim_{x \rightarrow 2} f(x) =$

(k.) For which values of x is $f(x)$ discontinuous? _____

(20 pts.) 13.) Evaluate the following limits: (Use ∞ or $-\infty$ where appropriate. Use d.n.e. for does not exist.) (4 pts. each)

(a.) $\lim_{x \rightarrow \infty} \frac{3x^2 + 2x - 5}{x^2}$

(b.) $\lim_{x \rightarrow -3} (x^2 + 3x + 2)$

(c.) $\lim_{x \rightarrow -5} \frac{x^2 - 25}{x + 5}$

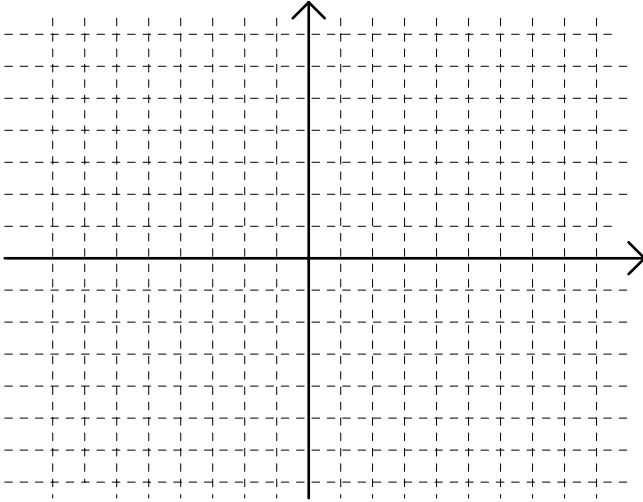
(d.) $\lim_{x \rightarrow 2} \sqrt{x + 14}$

(e.) $\lim_{x \rightarrow 4^+} \frac{x + 2}{x - 4}$

(8 pts.)

14.) Draw a rough graph and name all x-values where $f(x)$ is discontinuous. (8 pts.)

$$f(x) = \begin{cases} x^2 & \text{when } x < 2 \\ 4 & \text{when } 2 \leq x \leq 3 \\ x + 2 & \text{when } x > 3 \end{cases}$$



f is discontinuous at: _____