

Due: Canvas submission by Friday, August 13, 2019 at 7:30 am.

ALL WORK MUST BE SHOWN NEATLY ON A SEPARATE DOCUMENT. CIRCLE ANSWERS. LATE PAPERS WILL BE PENALIZED.

1. Find an equation in point-slope form of the line that passes through the points $(-2, 9)$ and $(1, 7)$.
2. Describe the transformations that occur from $y = |x|$ to $y = -2|x - 1| + 3$.
3. Find all x-intercepts and y-intercepts of $x^2 + 8x + 3y^2 - 6y = 9$.
4. Determine the symmetry of $2xy + 3x^2 = 9$ with respect to each of the following. Write yes or no and justify your answer with work.
 - a. X-axis
 - b. Y-axis
 - c. Origin
5. Find and simplify $\frac{f(a+h)-f(a)}{h}$ for $f(x) = 3x^2 + 4x$.
6. Given $f(x) = \sqrt{x+4}$, find f^{-1} and its domain.
7. For the functions f and g defined by $f(x) = 3x^2 + 5$ and $g(x) = 2x + 8$, find $g[f(x)]$.
8. Find the domain of $h(x) = \sqrt{6 - 5x}$.
9. Solve $9^{x-1} = 27^{x+2}$.
10. Find all real solutions to $x^4 - 13x^2 + 36 = 0$.
11. Use algebra to find the minimum value of the function $f(x) = 4x^2 - 3x - 5$. Give an exact value. Do not approximate.
12. Solve $\ln x = 1.935$ to the nearest thousandth.
13. Expand completely $\log_a \frac{a}{x^2 \sqrt[3]{y^2}}$
14. Expand $(2x - 3)^4$.
15. Solve $2300 = 4305e^{0.042t}$ for t . Round to the nearest thousandth.
16. Solve $\log_3 x + \log_3(x + 2) = \log_3(x + 12)$.

17. Let $f(x) = \frac{3x^2+5x+2}{9x^2-1}$. Find all asymptotes algebraically. Write "none" if the graph does not have that kind of asymptote.
- Vertical
 - Horizontal
 - Slant
 - Determine algebraically all points (if any) at which the graph crosses any asymptotes.
18. The graph of $f(x) = k(x + c)^5(x - d)^4$
- Crosses the x-axis at
 - Touches the x-axis at
19. Solve $2x^3 - 5x^2 + 3x > 0$.
20. Use the change of base formula to find $\log_5 21$ to the nearest thousandth.
21. Let $g(x) = \begin{cases} x^2 + 4 & \text{for } x \leq -1 \\ x - 10 & \text{for } -1 < x < 3 \\ 2x + 5 & \text{for } x \geq 3 \end{cases}$. Evaluate:
- $g(5)$
 - $g(-1)$
 - $g(2)$
22. Determine the equation of the slant asymptote of $f(x) = \frac{x^3-2x^2}{x^2+1}$.
23. Find the exact values of the five remaining trigonometric functions if $\sin t = -\frac{3}{7}$ and t is in quadrant III.
24. Solve for $0 \leq x \leq 2\pi$.
- $2 \cos x - 1 = 0$
 - $\sin 2x - \cos x = 0$
25. Use trigonometric identities to rewrite each expression in terms of a single trigonometric function.
- $(1 + \sin x)(1 - \sin x)$
 - $\cos t (\sec t - \cos t)$
26. Find the exact value of $\sin\left(\frac{\pi}{3} - \frac{\pi}{4}\right)$.
27. Find the equations for all asymptotes.
- $f(x) = \tan 3x$
 - $g(x) = \csc 2x$