

Math 150 Exam 2 Review Problem Set

Note: This exam review does not cover every topic that could be covered on your exam. Please take a look at the previous Week in Reviews for more practice problems. This WIR is more heavily weighted on Sections 4.5 & 5.1-5.4 since there has not been a review on these sections yet.

1. Find the terminal points determined by the following values of t .

(a) $t = \frac{23\pi}{6}$

(b) $t = -\frac{29\pi}{4}$

2. Determine the sign of the expression $\sec t \csc t \tan^2 t$ in Quadrant IV.

3. Evaluate the following.

(a) $\cot \frac{5\pi}{6}$

(b) $\cos \frac{7\pi}{4}$

(c) $\csc \frac{10\pi}{3}$

4. The terminal point of a number t is $(-\frac{4\sqrt{3}}{7}, y)$ and is in Quadrant II.

(a) Find the y -coordinate.

(b) Find all trig values of t .

5. Find all other trig values of t if $\csc t = -5$ and the terminal point of t is in Quadrant III.

6. Express $\sin t$ in terms of $\cot t$ if the terminal point of t is in Quadrant IV.

7. Find the amplitude, period, and phase shift, and sketch a graph of the following function.

$$f(x) = -3 \sin\left(2x - \frac{2\pi}{3}\right)$$

8. Find the period and describe how the following functions would be graphed.

(a) $f(x) = \tan\left(\frac{1}{4}x + 3\pi\right)$

(b) $f(x) = 2 \sec(5x - \pi) + 1$

9. A population that grows exponentially quadruples in size in 7 days. Find the initial population if it is known that the population is 2000 after 10 days.

10. Suppose the amount of a radioactive substance in grams after t years is modeled by the equation $m(t) = 25e^{-0.05t}$.

(a) What is the half-life of this substance?

(b) When will there be 7 grams remaining?

11. Evaluate $\frac{\log_4 8}{\log_4 32} \cdot (\log_4 \frac{3}{8} + \log_4 \frac{1}{6})$.

12. Solve the following equations.

(a) $2^{3x-4} = 6e^x$

(b) $\log_{16} x + 2 \log_{16}(x - 2) - \log_{16}(3x - 4) = \frac{1}{4}$

13. Find the domain, range, and asymptotes of the following functions.

(a) $f(x) = -e^{x-3} - 2$

(b) $f(x) = -\ln(x - 2) + 1$

14. Find the domains of the following functions.

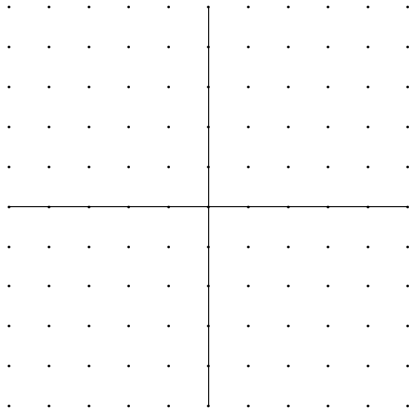
(a) $f(x) = \log_9(-x^2 - 2x + 24)$.

(b) $f(x) = \csc x$

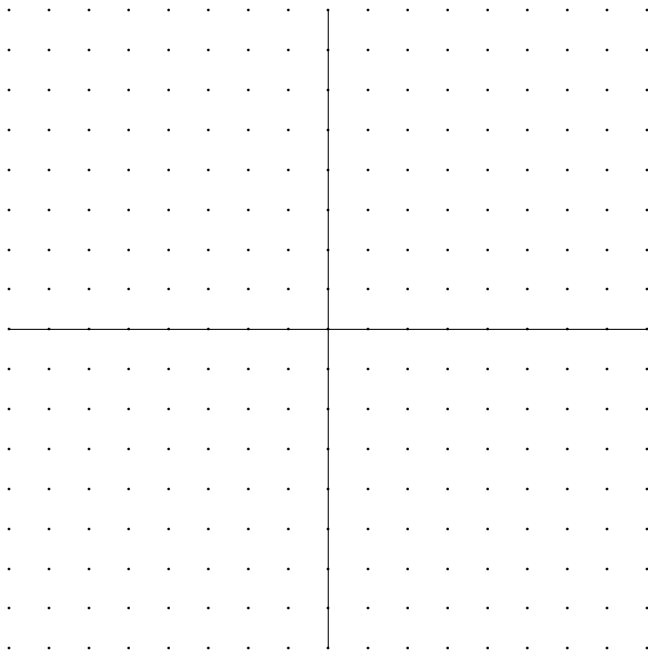
(c) $f(x) = \frac{\tan x}{x^2 - 9}$

(d) $f(x) = \frac{\ln(-3x + 5)}{e^{4x}}$

15. Describe the end behavior and graph the polynomial $P(x) = -\frac{1}{8}(x - 2)^2(x + 1)^2(x - 4)$.



16. Graph the rational function $r(x) = \frac{(3x^2 - 27)(x^2 + 2x - 35)}{(x^2 - 6x + 5)(x + 4)^2}$.



17. Find all real zeros for the polynomial $P(x) = x^3 + x^2 - 19x + 5$ and factor completely if you are told that -5 is a zero.

18. Simplify the expression: $\frac{i^{51}(2 + \sqrt{-4})(-1 - 3i)}{-2 + 5i}$.

19. Find the quotient and remainder for $\frac{x^4 - 4x^3 - 5x^2 - 4}{2x^2 + 4x - 6}$.