

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.
 $f(x) = -3\sin(2x - \frac{2\pi}{3})$
8. Find the period and describe how the following functions would be graphed.
 - (a) $f(x) = \tan(\frac{1}{4}x + 3\pi)$
 - (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 $\frac{x^4 - 4x^3 - 5x^2 - 4}{2x^2 + 4x - 6}$.