

Precalculus Final Exam REVIEW Calculator Active

1. Find all real values of x such that $f(x) = 0$.

$$f(x) = \frac{-4x + 3}{9}$$

2. Solve the system of equations using any method.

$$\begin{cases} 2x - 3y = -15 \\ 4x + 5y = 47 \end{cases}$$

- A) which method seems most efficient
B) check your solution in both equations

3. Find the equilibrium point of the demand and supply equations. (The equilibrium point is the price p and number of units x that satisfy both the demand and supply equations.)

Demand	Supply
$p = 49 - 0.03x$	$p = 0.7x - 535$

4. Evaluate the indicated function for $f(x) = x^2 - 6$ and $g(x) = x + 9$.

$$(fg)(3)$$

5. Determine the interval on which $(fg)(3)$ from problem 4 is decreasing.

- A) what is the difference between increasing, decreasing and constant
B) do you use x values or y values

6. Determine which point lies on the graph of the equation $y = 4x^2 - x + 4$.

- A) (2, 5)
B) (1, 5)
C) (2, 7)
D) (3, 6)
E) (1, 7)

7. Find all the rational zeros of the function $f(x) = 3x^4 + 8x^3 - 71x^2 - 200x - 100$.

8. Find $(f+g)(x)$.

$$f(x) = 6x^2 - 2x - 1$$

$$g(x) = 5x^2 - 6x$$

9. Find a polynomial with real coefficients that has zeros -8 , $10i$, and $-10i$.

A) $x^3 - 8x^2 + 100x - 800$

B) $x^3 + 100x^2 + 8x + 800$

C) $x^3 + 8x^2 - 100x - 800$

D) $x^3 + 8x^2 + 10x + 80$

E) $x^3 + 8x^2 + 100x + 800$

10. Condense the expression $\frac{1}{5}(\log x - \log y)$ to the logarithm of a single term.

11. Find the value(s) of x for which $f(x) = g(x)$.

$$f(x) = x^2 + 12x - 31 \qquad g(x) = 6x - 4$$

12. An initial investment of \$7000 grows at an annual interest rate of 8% compounded continuously. How long will it take to double the investment?

13. Find the inverse of the one-to-one function.

$$y = 9x + 2$$

A) what are the steps to find an inverse function

B) what do inverse functions look like graphically

14. Solve the equation.

$$7^x = 3$$

A) solve it algebraically

B) solve it graphically

15. \$3000 is invested at 4.2%, compounded monthly. How much will the investment be in 5 years?

A) Need to know this formula for the final

16. Give the coordinates of the circle's center and its radius.

$$(x + 1)^2 + (y - 2)^2 = 9$$

A) what is standard form of the equation of a circle

B) sketch the graph

17. The table below lists some points of a function.

x	1	3	4	6	7	8
$f(x)$	1.5	10.2	13.4	16.3	18.2	18.3

- Find an exponential model for the data.
- Find a logarithmic model for the data. (do you use LnReg or Logistic and why?)
- Determine which model best fits the data.

18. Determine whether the function is one-to-one.

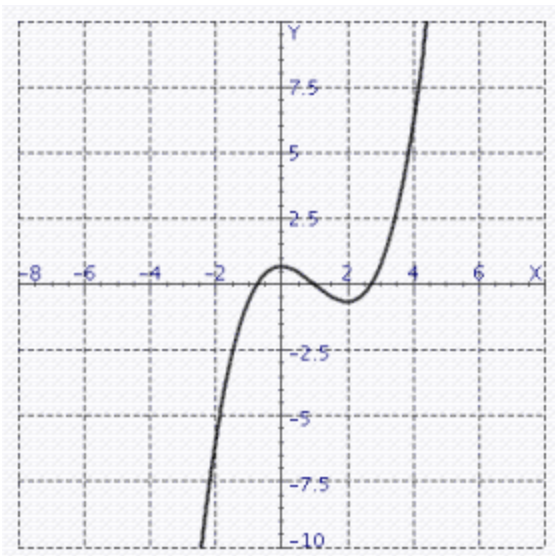
$$y = |x - 4|$$

- No, it isn't one-to-one.
- Yes, it is one-to-one.

19. During one performance of the BC Players presentation of *The Producers*, the box office sold 243 tickets and collected \$1335. If adult tickets sold for \$9 and student's tickets sold for \$3, how many of each type of ticket were sold?

20. The graph of a function is sketched below.
Determine the interval on which the function is decreasing.

- what is the difference between increasing, decreasing and constant
- do you use x values or y values



21. The number of bacteria present in a culture is $B = 75e^{0.17t}$ where t is the time in minutes. Find the time required, to the nearest half minute, to have 390 bacteria present.

22. Solve the given system of equations.

$$\begin{cases} 8x - 9y + z = -1 \\ 3x + 3y - 9z = -123 \\ 8x - 5y + 2z = -16 \end{cases}$$

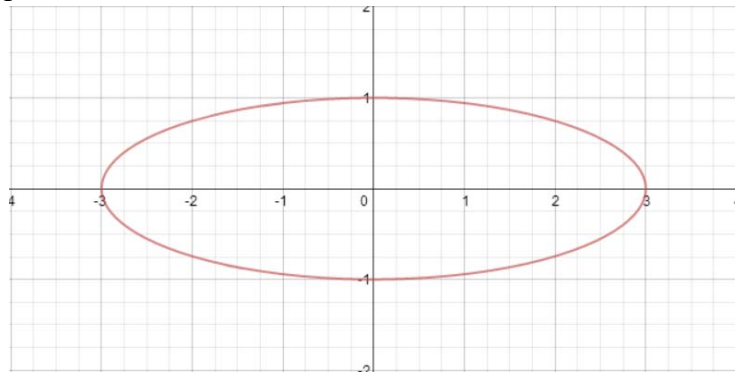
23. Find the vertex and focus of the parabola.

$$(y+2)^2 = -16(x+3)$$

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24. Find the equation that represents the graph.



25. Complete the square to find the center of the conic section. $9x^2 + y^2 - 108x - 2y + 289 = 0$

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