

Name: Answer Key

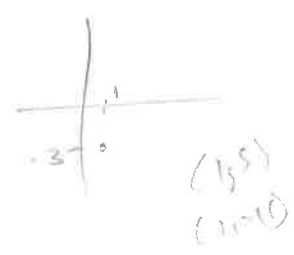
S1

Precalculus

Mock Final MC Part 2

14. Identify a focus of the ellipse: $\frac{(y+3)^2}{100} + \frac{(x-1)^2}{36} = 1$

- A.) (1, 5)
- B.) (5, 1)
- C.) (9, -3)
- D.) (-3, 9)

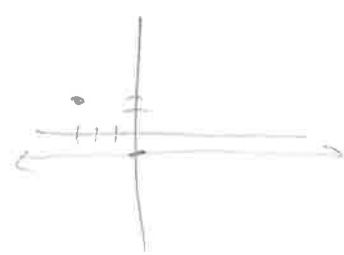


15. Identify the slopes of the asymptotes of the hyperbola $\frac{(x+5)^2}{16} - \frac{(y-3)^2}{9} = 1$.

- A.) $\pm \frac{9}{16}$
- B.) $\pm \frac{16}{9}$
- C.) $\pm \frac{3}{4}$
- D.) $\pm \frac{4}{3}$

16. Identify the directrix of the parabola $(x + 3)^2 = 12(y - 2)$

- A.) $y = 5$
- B.) $x = 0$
- C.) $y = -1$
- D.) $x = -6$



17. Identify the type of conic: $3x^2 + 4y^2 - 18x - 8y + 19 = 0$

- A.) Circle
- B.) Ellipse
- C.) Hyperbola
- D.) Parabola

18. Which of the following is a formula for the arithmetic sequence: $a_1 = 7, a_2 = 4, a_3 = \dots$

- A.) $a_n = -3n + 10$
- B.) $a_n = -3n + 7$
- C.) $a_n = 10n - 3$
- D.) $a_n = 7n - 3$

$a_n = -3n + 10$

19. Which of the following is the formula for a geometric sequence where $a_1 = 4$ and $r = 3$?

- A.) $a_n = 3(4)^{n-1}$
- B.) $a_n = 3(4)^n$
- C.) $a_n = 4(3)^{n-1}$
- D.) $a_n = 4(3)^n$

20. Evaluate the series: $\sum_{n=0}^3 (2)^n$

- A.) 1
- B.) 8
- C.) 14
- D.) 15

$1 + 2 + 4 + 8$

21. Find the sum of: $48 + 24 + 12 + \dots$

$$S = \frac{48}{1 - \frac{1}{2}} = \frac{48}{\frac{1}{2}} = 96$$

A.) 24

B.) 84

C.) 96

D.) 102

22. Evaluate $\log_3\left(\frac{1}{27}\right)$.

A.) -4

B.) -3

C.) 3

D.) $\frac{1}{9}$

23. Convert the exponential equation into logarithmic form: $x^{\frac{7}{2}} = 13$

A.) $\log_x(13) = \frac{7}{2}$

B.) $\log_{\frac{7}{2}}(x) = 13$

C.) $\log_{13}\left(\frac{7}{2}\right) = x$

D.) $\log_x\left(\frac{7}{2}\right) = 13$

24. Solve the following: $2^{x-4} = 16^3$

A.) $x = -4$

B.) $x = 7$

C.) $x = 8$

D.) $x = 16$

25. What is the range of $f(x) = \frac{1}{3}(5)^x + 1$?

A.) $(-\infty, \infty)$

B.) $(-1, \infty)$

C.) $(1, \infty)$

D.) $(5, \infty)$

26. Convert the logarithmic equation into exponential form: $\log_x 8 = 2$

A.) $2^8 = x$

B.) $2^x = 8$

C.) $8^2 = x$

D.) $x^2 = 8$

27. Evaluate $\lim_{x \rightarrow 4} \frac{x^2 - 4x}{x^2 + 3x - 28}$

$$\frac{x(x-4)}{(x+7)(x-4)}$$

A.) Does not exist

B.) $\frac{4}{11}$

C.) 1

D.) 0