

Precalculus Placement Review

- Given: $f(x) = \frac{1}{x^3}$, evaluate the following: $f(3)$
 - Undefined
 - $\frac{1}{9}$
 - $\frac{1}{3}$
 - $\frac{1}{27}$
 - none of these
- Solve the equation: $3^{-2x} = 9$
 - $x = -1$
 - $x = 3$
 - $x = -2$
 - $x = 1$
 - none of these
- Given: $f(x) = \frac{1}{x}$, evaluate the following: $\frac{f(x+h)-f(x)}{h}$
 - $\frac{-1}{x^2+xh}$
 - $\frac{1}{xh}$
 - $3x^2 + 3xh + h^2$
 - $3x^2 + h$
 - none of these
- Solve the equation: $\log_3((x+1)^2) = 0$
 - No solutions
 - $x = \{-2, 0\}$
 - $x = \{-1\}$
 - $x = \{0, 2\}$
 - none of these
- Determine the **minimum value** of the function: $y = x^2 - 8x$
 - $y = 8$
 - $y = 0$
 - $y = -16$
 - No minimum value
 - none of these
- Solve the system: $\begin{cases} y = 4 - x^2 \\ y = x^2 \end{cases}$
 - (1, 1)
 - (2, 4)
 - $(\pm\sqrt{2}, 2)$
 - (-2, 0)
 - none of these
- Given: $f(x) = x^3$, evaluate the following: $f\left(\frac{1}{a}\right)$
 - Undefined
 - a^3
 - 3^a
 - $\frac{1}{a}$
 - none of these
- Determine the **domain** of the function: $f(x) = |\log_3 2x|$
 - All real numbers
 - All reals, $x > 0$
 - All reals, $x < 2$
 - All reals, $x > \frac{1}{2}$
 - none of these
- Solve the equation: $e^{-3x} = e$
 - $x = -\frac{1}{3}$
 - $x = 1$
 - $x = -\frac{e}{3}$
 - $x = 0$
 - none of these
- Solve the system: $\begin{cases} 3x + y = 1 \\ 6x - 2y = 10 \end{cases}$
 - No solutions
 - (-1, 1)
 - (0, 1)
 - (1, -2)
 - none of these
- Solve the equation: $\log_2(x+3) + \log_2(x+2) = 1$
 - No solutions
 - $x = \{-1, 4\}$
 - $x = \{-4, -1\}$
 - $x = \{1, 4\}$
 - none of these
- The function: $f(x) = (x-3)^2 + 3$ is decreasing on the interval:
 - $1 < x < 3$
 - All reals, $x > 3$
 - $0 < x < 2$
 - All reals, $x < 3$
 - none of these
- Solve the system: $\begin{cases} y = x^{\frac{3}{2}} \\ x^{\frac{1}{2}} = y \end{cases}$
 - (1, 1)
 - (4, 2)
 - (4, 8)
 - $\left(\frac{1}{2}, \frac{3}{2}\right)$
 - none of these

14. Determine the **domain** of the function: $f(x) = \sqrt{x^2 - 4}$
- a) All real numbers b) All reals, $x \neq \pm 2$ c) All reals, $x < 2$ d) All reals, $x > 0$ e) none of these
15. Given: $f(x) = \frac{x}{2} - 5$, evaluate the inverse function: $y = f^{-1}(x)$
- a) $y = 2x - 5$ b) $y = 2x + 10$ c) $y = x - 2$ d) $y = 10x + 5$ e) none of these
16. Determine the **maximum value** of the function: $y = 5 - |x - 1|$
- a) $y = 5$ b) $y = 4$ c) $y = -1$ d) No maximum value e) none of these
17. Solve the equation: $2\log_4(x + 2) = 1$
- a) No solutions b) $x = \{0, 4\}$ c) $x = \{3\}$ d) $x = \{-4, 0\}$ e) none of these
18. Determine the **range** of the function: $f(x) = (x + 5)^2 - 5$
- a) All real numbers b) All reals, $y > 5$ c) $-5 < y < 5$ d) All reals, $y \neq -5$ e) none of these
19. Determine the **y-intercept** of the graph: $y = e^{1-x} - 2$
- a) No y-intercept b) $y = e^{-2}$ c) $y = e - 2$ d) $y = -2$ e) none of these
20. Determine the **x-intercept** of the graph: $y = e^{1-x} - 2$
- a) No x-intercept b) $x = e^{-2}$ c) $x = \ln 2$ d) $x = 1 - \ln 2$ e) none of these
21. Solve the equation: $\log_2(x - 1) - \log_2(x + 1) = 2$
- a) No solutions b) $x = \frac{4}{3}$ c) $x = -\frac{5}{3}$ d) $x = 2$ e) none of these
22. Solve the equation: $\left(\frac{1}{16}\right)^3 = 2^{-(2x+4)}$
- a) $x = 4$ b) $x = -2$ c) $x = 8$ d) $x = 0$ e) none of these
23. Solve the equation: $2^{1-3x} = -4$
- a) $x = -\frac{1}{3}$ b) $x = -1$ c) $x = 2$ d) $x = \log_2\left(\frac{4}{3}\right)$ e) none of these
24. Solve the equation: $\log_6(x + 5) = 2$
- a) No solutions b) $x = \{7\}$ c) $x = \{31\}$ d) $x = \{-7\}$ e) none of these
25. The function: $f(x) = x^2 - 10x + 26$ is increasing on the interval:
- a) $1 < x < 5$ b) All reals, $x > 5$ c) $-5 < x < 5$ d) All reals, $x < -5$ e) none of these
26. Given: $f(x) = x^3 - 1$, evaluate the inverse function: $y = f^{-1}(x)$
- a) $y = 3x + 3$ b) $y = \frac{1}{(x+1)^3}$ c) $y = \sqrt[3]{x+1}$ d) $y = \frac{3}{x+1}$ e) none of these