

Precalculus - Placement Test Review

1. If $f(x) = 1/x^3$, find $f(3)$
A) Undefined, B) $1/9$, C) $1/3$, D) $1/27$, E) None of the above
2. Solve the equation $3^{-2x} = 9$.
A) $x = -2$, B) $x = 3$, C) $x = -1$, D) $x = 1$, E) None of the above
3. If $f(x) = x^3$, find $f(1/a)$
A) Undefined, B) a^3 , C) $3a$, D) $1/a$, E) None of the above
4. Let $f(x) = (x-1)/(4-x^2)$. Find the domain of f .
A) All real numbers, B) All $x \neq 1$, C) $-2 < x < 2$, D) All $x \neq \pm 2$, E) None of the above
5. If $f(x) = 1/x$, find $\frac{f(x+h) - f(x)}{h}$
A) $-1/(x^2 + xh)$, B) $1/xh$, C) $3x^2 + 3xh + h^2$, D) $3x^2 + h$, E) None of the above
6. Solve the equation $\log_3((x+1)^2) = 0$.
A) No solutions, B) $x = 0, x = -2$, C) $x = -1$, D) $x = 0, x = 2$, E) None of the above
7. Find the minimum value of the function $y = x^2 - 8x$.
A) $y = 8$, B) $y = 0$, C) $y = -16$, D) No minimum value, E) None of the above
8. Find a point that lies on both graphs: $y = 4 - x^2$ and $y = x^2$.
A) $(1, 1)$, B) $(2, 4)$, C) $(-\sqrt{2}, 2)$, D) $(-2, 0)$, E) None of the above
9. Find the range of $f(x) = |\log_3 2x|$.
A) All real numbers, B) All $x \geq 0$, C) All $x < 2$, D) All $x > 1/2$, E) None of the above
10. Solve the equation $e^{-3x} = e$.
A) $x = -1/3$, B) $x = 1$, C) $x = -e/3$, D) $x = 0$, E) None of the above
11. Solve the system $\begin{cases} 3x + y = 1 \\ 6x - 2y = 10 \end{cases}$
A) $x = 0, y = 1$, B) $x = 1, y = -2$, C) $x = 0, y = -5$, D) $x = -1, y = 1$, E) None of the above
12. The function $f(x) = (x-3)^2 + 3$ is decreasing on the interval
A) $1 < x < 3$, B) All $x \geq 3$, C) $0 < x < 2$, D) All $x \leq 3$, E) None of the above
13. Find a point that lies on both graphs: $y = x^{3/2}$ and $y = x^{1/2}$.
A) $(1, 1)$, B) $(4, 2)$, C) $(4, 8)$, D) $(1/2, 3/2)$, E) None of the above
14. Let $f(x) = \sqrt{x^2 - 4}$. Find the domain of f .
A) All real numbers, B) All $x > 2$, C) $-2 < x < 2$, D) All $x \neq \pm 2$, E) None of the above

15. Given $f(x) = x/3 - 2$, find the inverse function $y = f^{-1}(x)$.
- A) $y = 3x - 3$, B) $y = 3x + 6$, C) $y = x - 6$, D) $y = 9x - 1$, E) None of the above
16. Find the maximum value of the function $y = 5 - |x - 1|$.
- A) $y = -1$, B) $y = 4$, C) $y = 5$, D) No maximum value, E) None of the above
17. Let $f(x) = x^2 / (9 - x^2)$. Find the range of f .
- A) All real numbers B) All $y \neq -1$, C) $-3 < y < 3$, D) All $y \neq \pm 3$, E) None of the above
18. Find the y -intercept of the graph of $y = e^{1-x} - 2$.
- A) No y -intercept B) $y = e$, C) $y = e - 2$, D) All $y = -2$, E) None of the above
19. Find the x -intercept of the graph of $y = e^{1-x} - 2$.
- A) No x -intercept B) $x = e^{-2}$, C) $x = \ln 2$, D) $x = 1 - \ln 2$, E) None of the above
20. Solve the equation $\log_2(x - 1) - \log_2(x + 1) = 2$.
- A) No solutions, B) $x = 4/3$, C) $x = -5/3$, D) $x = 2$, E) None of the above
21. Solve the equation $2^{1-3x} = -4$.
- A) $x = -1/3$, B) $x = -1$, C) $x = 2$, D) $x = \log_2(4/3)$, E) None of the above
22. Find a point that lies on both graphs: $y = 4 - 2x^2$ and $y = x + 1$.
- A) $(1, 2)$, B) $(0, 1)$, C) $(2, -4)$, D) $(1/2, 3/2)$, E) None of the above
23. Solve the system
$$\begin{cases} 2x + y = 1 \\ 6x + 3y = 3 \end{cases}$$
- A) No solutions, B) $(1, -1)$, C) $(0, 1)$, D) All $(x, 1-2x)$, E) None of the above
24. Given $f(x) = x^3$, find the inverse function $y = f^{-1}(x)$.
- A) $y = 3x$, B) $y = 1/x^3$, C) $y = \sqrt[3]{x}$, D) $y = 3/x$, E) None of the above