

Precalculus Placement Review

- If $f(x) = \frac{1}{x^3}$, find $f(3)$
(a) Undefined (b) $\frac{1}{9}$ (c) $\frac{1}{3}$ (d) $\frac{1}{27}$ (e) none of these
- Solve the equation $3^{-2x} = 9$
(a) $x = -2$ (b) $x = 3$ (c) $x = -1$ (d) $x = 1$ (e) none of these
- If $f(x) = x^3$, find $f\left(\frac{1}{a}\right)$
(a) Undefined (b) a^3 (c) 3^a (d) $\frac{1}{a}$ (e) none of these
- Let $f(x) = \frac{(x-1)}{(4-x^2)}$. 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 these
- If $f(x) = \frac{1}{x}$, find $\frac{f(x+h) - f(x)}{h}$
(a) $\frac{-1}{(x^2 + xh)}$ (b) $\frac{1}{xh}$ (c) $3x^2 + 3xh + h^2$ (d) $3x^2 + h$ (e) none of these
- 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 these
- 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 these
- 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 these
- Find the range of $f(x) = |\log_3 2x|$
(a) All real numbers (b) All $x \geq 0$ (c) All $x < 2$ (d) All $x > \frac{1}{2}$ (e) none of these
- Solve the equation $e^{-3x} = e$
(a) $x = -\frac{1}{3}$ (b) $x = 1$ (c) $x = -\frac{e}{3}$ (d) $x = 0$ (e) none of these
- 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 these
- 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 these

13. Find a point that lies on both graphs: $y = x^{\frac{3}{2}}$ and $y = x^{\frac{1}{2}}$

- (a) (1,1) (b) (4,2) (c) (4,8) (d) $\left(\frac{1}{2}, \frac{3}{2}\right)$ (e) none of these

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 these

15. Given $f(x) = \frac{x}{3} - 2$ find the inverse function $y = f^{-1}(x)$

- (a) $y = 3x - 3$ (b) $y = 3x + 6$ (c) $y = x - 6$ (d) $9x - 1$ (e) none of these

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 these

17. If $f(x) = \frac{x^2}{(9 - x^2)}$, 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 these

18. Find the y-intercept of the graph $y = e^{1-x} - 2$

- (a) No y-intercept (b) $x = e^{-2}$ (c) $y = e - 2$ (d) All $y = -2$ (e) none of these

19. Find the x-intercept of the graph $y = e^{1-x} - 2$

- (a) No x-intercept (b) $x = e^{-2}$ (c) $\ln 2$ (d) All $x = 1 - \ln 2$ (e) none of these

20. 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

21. 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

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) $\left(\frac{1}{2}, \frac{3}{2}\right)$ (e) none of these

23. Solve the system $\begin{cases} 2x + y = 1 \\ 6x + 3y = 3 \end{cases}$

- (a) No Solutions (b) (1,-1) (c) (0,1) (d) $(x, 1 - 2x)$ (e) none of these

24. Given $f(x) = x^3$ find the inverse function $y = f^{-1}(x)$

- (a) $y = 3x$ (b) $y = \frac{1}{x^3}$ (c) $y = \sqrt[3]{x}$ (d) $y = \frac{3}{x}$ (e) none of these