

- 1) Evaluate the function $f(x) = x^2 + 6x$ at $x = 8$
- 2) For the function $f(x) = 3x^2 + 7$, find $\frac{f(a+h)-f(a)}{h}$
- 3) What is the domain of the function in interval notation, $f(x) = \frac{7}{4x+12}$
- 4) Sketch the graph of the piecewise function: $f(x) = \begin{cases} 1 & \text{if } x < -1 \\ x^2 & \text{if } -1 \leq x \leq 1 \\ -x+2 & \text{if } x > 1 \end{cases}$
- 5) Graph $f(x) = x^3 - 2x^2 + 4$ state where $f(x)$ increases.
- 6) Find the average rate of change of the function $f(x) = x^3 - 2x^2$ between $x = 0$ and $x = 8$
- 7) Find the maximum value of the function $f(x) = -4x^2 + 48x - 50$
- 8) Find all local minimum values of the function and the x value where they occur.
 $g(x) = x^4 - 4x^3 - 3x^2$
- 9) If a ball is thrown upward with a velocity of 80ft/sec, its height (in feet) after t seconds is given by: $h(t) = 80t - 16t^2$. What is the maximum height attained by the ball?
- 10) Find the inverse of the function: $f(x) = \frac{1}{x+3}$
- 11) Use $f(x) = 2x - 6$ and $g(x) = 5 - x^2$ to evaluate the expression.
a) $f(g(1))$ b) $g(f(1))$
- 12) Find $f \circ g \circ h$ given: $f(x) = \frac{5}{x}$, $g(x) = x^3$, $h(x) = x^2 + 4$
- 13) Find the domain of $f(x) = \frac{\sqrt{x+5}}{x-1}$

Answers:

1) $f(8)=112$ 2) $3h + 6a$ 3) $(-\infty, -3) \cup (-3, \infty)$ 4) see graph

5) $(-\infty, 0] \cup [1.33, \infty)$ 6) 48 7) 94

8) Min. of -0.20 occurs when $x = -0.44$, minimum -58.30 occurs when $x = 3.44$

9) 100 feet 10) $f^{-1}(x) = \frac{1}{x} - 3$ 11) a. 2 b. -11

12) $\frac{5}{x^6 + 12x^4 + 48x^2 + 64}$ 13) $[-5, 1) \cup (1, \infty)$