

College Algebra Sec 4 Practice Exam 2

1. A person standing close to the edge at the top of a 200 foot building throws a baseball vertically upward. The quadratic function $s(t) = -16t^2 + 64t + 200$ models the ball's height above the ground $s(t)$ in feet t seconds after it was thrown.

- What is the maximum height the ball reaches?
- How many seconds does it take until the ball hits the ground?
- Calculate $s(0)$ and describe what it represents.

2. Solve the following equation for x : $\sqrt{2x+9} - 8 = x$

3. Consider the function $f(x) = 4 - x^2$

a) Find and simplify the difference quotient $\frac{f(x+h) - f(x)}{h}$

b) If $g(x) = x + 5$, find $(f \circ g)(x)$.

c) What is the domain of the function $(f \circ g)(x)$? Give your solution in interval notation.

4. Consider the following graph of a function $h(x)$:

a) On what intervals is $h(x)$ increasing and decreasing?

b) Sketch the graph of $h(x+1) + 2$

c) What is the domain of $h(x)$?

d) Find $h(3)$.

e) Is $h(4)$ a relative maximum?

5. Find the inverse of : $f(x) = (x+2)^3$ and show that your answer is in fact an inverse.

6. Find the equation of a line that passes through the points (1,2) and (5,10).

7. Solve the linear inequality $7 - \frac{4}{5}x < \frac{3}{5}$. Give your solution in interval notation.

8. Solve the following polynomial by factoring: $3x^4 = 48x^2$

9. Find the domain of the following functions:

a) $f(x) = \sqrt{x-1}$

b) $g(x) = \frac{2}{x^2 + x - 12}$

10. Consider the following:

a) Which of the above lines has the greatest slope?

b) Which of the above lines has the greatest y-intercept?

Formulas for exam 2:

- The vertex of a parabola defined by $f(x) = ax^2 + bx + c$ is $(-\frac{b}{2a}, f(-\frac{b}{2a}))$
- Point Slope equation of a line: $y - y_1 = m(x - x_1)$