

San José State University
Fall 2015
Math-8: College Algebra
Section 03: MW noon–1:15pm
Section 05: MW 4:30–5:45pm

Exam 3

Name: _____

For problems 1-4, define the following:

$$f(x) = x^2 - 8x + 12$$

$$g(x) = \sqrt[4]{x}$$

$$h(x) = \sqrt[9]{x+1}$$

$$s(x) = \frac{h}{(g \circ f)}(x)$$

$$t(x) = \frac{f(x)}{f(x)}$$

1. Determine $s(x)$

2. Evaluate $s(0)$. Leave the answer in exact form.

3. What is the domain of $s(x)$?

4. Sketch the graph of $t(x)$. Be sure to label all important values.

5. (True or false): $(f \circ g) = (g \circ f)$.

6. Let $h(x) = \frac{2}{x+1} + x + 1$. Find suitable $f(x)$ and $g(x)$ such that $h(x) = (g \circ f)(x)$.

7. Divide $x^4 - x^2 + 2$ by $x^2 + 1$. State the answer in division algorithm form.

8. Find all points of intersection for:

$$\begin{aligned}x^2 + y - 6x + 7 &= 0 \\x - y &= 3\end{aligned}$$

9. Find all solutions (if any):

$$\begin{array}{rcl} x + 4z & = & 1 \\ x + y + 10z & = & 10 \\ 2x - y + 2z & = & -5 \end{array}$$

10. Determine all x and y intercepts, use the leading coefficient test to determine behavior as $x \rightarrow \pm\infty$, and sketch the following polynomial. Be sure to label all important points and explain how you arrived at the sign for each interval between the x intercepts.

$$f(x) = x^4 + 3x^3 - 9x^2 - 23x - 12$$