

Algebra 2: 3rd Quarter

SST 3 Practice

Show all work and leave all answers in simplest form.

NO calculators

Name _____

Per. _____

1. Evaluate $(f \circ g)(x)$ for $f(x) = 3x + 4$; $g(x) = x^2 - 2x + 7$

$f(g(x)) = 3(x^2 - 2x + 7) + 4$

$f(x^2 - 2x + 7) = 3x^2 - 6x + 21 + 4$

2. Graph: $y = -x^2 + 6x - 2$. Label the vertex as "V" and show at least 2 other points.

$(3)^2 + 6(3) - 2 = 9 + 18 - 2 = 25$
 $\frac{-6}{2(-1)} = \frac{-6}{-2} = 3$

$9 + 18 - 2 = 25$

3. Simplify: $(4i^{18})(2i^{15})(3i^8)(-2i^{22})$

$4 \cdot 2 \cdot 3 \cdot (-2) = -48$
 $i^{18+15+8+22} = i^{63} = i^3 = -i$
 $-48 \cdot (-i) = 48i$

4. Find the zeros of the function: $y = 6x^2 - 11x - 10$

$\frac{18}{15} = \frac{6}{5}$
 $\frac{33}{30} = \frac{11}{10}$
 $(x - \frac{5}{2})(x + \frac{2}{3})$

5. Factor completely: $25x^4 - 9x^2$

$x^2(25x^2 - 9) = x^2(5x - 3)(5x + 3)$

6. Divide: $(2x^4 - 5x^3 + 7x - 3) \div (x - 2)$

$2x^3 + 2x^2 - 5x - 7 + \frac{11}{x-2}$

7. Simplify: $(5 - 3i)(3 - 7i)$

$15 - 35i - 9i + 21i^2 = 15 - 44i - 21 = -6 - 44i$

8. Simplify: $\left(\frac{8x^{-5}y^5}{6x^2y^{-14}}\right)^3 \left(\frac{4y^{19}}{3x^7}\right)^3$

$\frac{64y^{57}}{27x^{21}}$

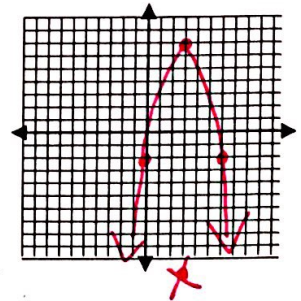
9. Simplify: $\sqrt[3]{256x^9y^{12}z^{27}}$

$4x^3y^4z^9$

10. Find the 4th term of $(3a + b)^4$

$4(3a)^3(b)$

1. $3x^2 - 6x + 25$



2. $48i$

3. $\frac{5}{2}, -\frac{2}{3}$

4. $x^2(5x - 3)(5x + 3)$

5. $2x^3 - x^2 - 2x + 3 + \frac{11}{x-2}$

6. $-6 - 44i$

7. $\frac{64y^{57}}{27x^{21}}$

8. $4x^3y^4z^9$

9. $4(3a)^3(b)$