

SGM Study Guide

1. Simplify $i^{15} + 2i^5 - i^8 + 3i$

2. Simplify with rational exponents $\sqrt[6]{64x^7yz^2}$

3. Given

$$f(x) = x^2 + 1$$

$$g(x) = 3x - 2$$

$$h(x) = -2x^2$$

Find: a) $f(x) + h(x)$

b) $f(x) - g(x)$

c) $f(g(x))$

d) $g(h(x))$

4. Use Pascal's triangle to expand the following binomial: $(2x - 3)^4$

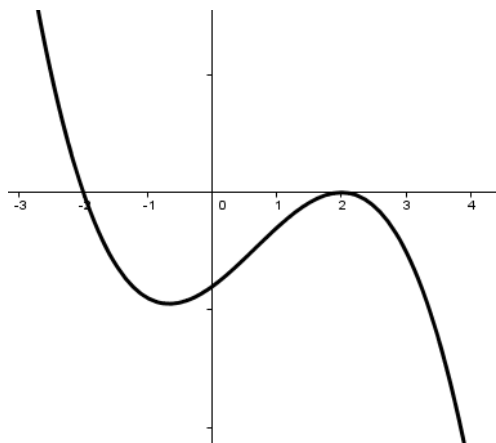
5. What is the coefficient of the third term in the expansion of $(y - 2x)^4$?

6. What is the 2nd term in the expansion of $(3x - 1)^5$?

7. Rewrite the equation as a quotient and a remainder $(2x^3 - 3x^2 + x - 8) \div (x - 2)$

8. What is the inverse of $f(x) = \{(3,5), (-2, 0), (7, 4), (-4, 5)\}$

9. Write the equation of the function



10. Find the interval of increase and interval of decrease of the graph in #9.

11. Write a polynomial in factored form given the roots.

a) $x = -3, \frac{-5}{4}, 2$

b) $x = 4, \sqrt{6}$

c) $x = 5, 4i, -4i$

$f(x) =$	V.A.	H.A.	S.A.	x-intercepts	y-intercept	Holes	Domain	$x \rightarrow \infty,$ $f(x) \rightarrow$	$x \rightarrow -\infty,$ $f(x) \rightarrow$
12. $\frac{x+2}{x^2-4}$									
13. $\frac{x+2}{x^2-2x-8}$									

14. Graph and tell the domain and range $f(x) = -2\sqrt{x+2} + 4$. Tell the transformations that occurred.

Convert to exponential form:

Convert to logarithm form:

15.) $\log_4 \frac{1}{256} = -4$

16.) $\log_2 64 = 6$

17.) $9^4 = 6561$

18.) $6^{-3} = \frac{1}{216}$

19.) Find the inverse of $y = \log_4 (x + 3) - 2$

20.) Graph #19 and determine the end behavior.

21) Expand the expression $\log \frac{z^3 \sqrt[6]{x^7}}{y^4}$

22) Simplify $\frac{x^2 - 6x - 27}{2x^2 + 2x} \div \frac{x^2 - 14x + 45}{x^2}$