



Test Review




Warm Up

$$(x+2)^4$$


$$\begin{array}{ccccccc} & & & & & & 1 \\ & & & & & 1 & 2 \\ & & & & 1 & 3 & 3 & 1 \\ & & 1 & 4 & 6 & 4 & 1 & & \\ 1 & x^4 & 4 & x^3 & 6 & x^2 & 4 & x & 1 & x^0 \end{array}$$

$$x^4 + 8x^3 + 24x^2 + 32x + 16$$



$$(3x+2)^3$$

$$\begin{array}{cccc} 1 & 3 & 3 & 1 \\ (3x)^3 & 3(3x)^2(2) & 3(3x)(2)^2 & (2)^3 \\ 27x^3 & +54x^2 & +36x & +8 \end{array}$$



$$(2x+1)^3$$

$$\begin{array}{cccc} 1 & 3 & 3 & 1 \\ (2x)^3 & 3(2x)^2(1) & 3(2x)(1)^2 & (1)^3 \\ 8x^3 & +12x^2 & +6x & +1 \end{array}$$


$$(x-2)^5$$


$$\begin{array}{ccccccc} 1 & 5 & 10 & 10 & 5 & 1 \\ x^5 & 5x^4(-2) & 10x^3(-2)^2 & 10x^2(-2)^3 & 5x(-2)^4 & (-2)^5 \\ x^5 & -10x^4 & +40x^3 & -80x^2 & +80x & -32 \end{array}$$


$$(2x-3y)^6$$


$$\begin{array}{ccccccc} & & & & & & 1 \\ & & & & & 1 & 6 \\ & & & & 1 & 12 & 20 & 15 & 6 & 1 \\ & & 1 & 6 & 15 & 20 & 15 & 6 & 1 & & \\ 1 & (2x)^6 & 6(2x)^5(-3y) & 15(2x)^4(-3y)^2 & 20(2x)^3(-3y)^3 & 15(2x)^2(-3y)^4 & 6(2x)(-3y)^5 & (-3y)^6 \\ 64x^6 & -576x^5y & +2160x^4y^2 & -4320x^3y^3 & +4860x^2y^4 & -2910xy^5 & +729y^6 \end{array}$$


1. $f(x) = 5 - 3x^3 + 2x^4 - 4x$
 Standard Form: $2x^4 - 3x^3 - 4x + 5$
 Leading Coefficient: 2
 Constant: 5
 Name by Degree: Quartic
 Name by # of Terms: polynomial four terms

D
 Constant
 Linear
 Quadratic
 Cubic
 Quartic
 Quintic




2. $g(x) = 5x + 2x^2 - x^4 + 7$
 Standard Form: $-x^4 + 2x^2 + 5x + 7$
 Leading Coefficient: -1
 Constant: 7
 Name by Degree: quartic
 Name by # of Terms: poly w/ 4 terms




3. $(2x - 7 + 3x^3) + (x^3 - 2x^2 + 5x)$

$4x^3 - 2x^2 + 7x - 7$




$(4x^4 - 3x^2 + x - 5) - (2x^2 - 3x^4 - 3x + 1)$
 $+ -2x^2 + 3x^4 + 3x - 1$

$7x^4 - 5x^2 + 4x - 6$




$(2x - 3)(x + 2)$

$2x^2 + 4x - 3x - 6$
 $2x^2 + x - 6$



$(3x - 1)(x^2 + 2x - 3)$


$3x^3 + 6x^2 - 9x - 1x^2 - 2x + 3$
 $3x^3 + 5x^2 - 11x + 3$



$(a+b)(a^2+2ab-b^2)$


$a^3 + 2a^2b - ab^2 + a^2b + 2ab^2 - b^3$

$a^3 + 3a^2b + ab^2 - b^3$




$2x^3(x^3-3x^2+7)$


$2x^6 - 6x^5 + 14x^3$




9. $(x+4)^3$




10. $(2x-3)^3$



11. $(x-3)^5$




12. $(x+y)^6$




$f(x) = x^2 - 3x + 4$ $g(x) = 2x + 1$ $h(x) = 3x^3 + 2x - 1$
 13. $g(x) - h(x)$ (x)

$$(2x+1) - (3x^3+2x-1)$$


$$-3x^3 - 2x + 2$$


17. $(2x^4 - 3x^3 + 2x + 5) \div (x+1)$


$$\begin{array}{r} 2x^3 - 2x^2 + 3x + 2 \\ x+1 \overline{) 2x^4 - 3x^3 + 2x + 5} \\ \underline{2x^3 + 2x^2 + x + 1} \\ -5x^3 - x^2 + x + 4 \\ \underline{5x^3 + 5x^2 + 5x + 5} \\ -4x^2 - 4x - 1 \end{array}$$

$$(2x^3 - 2x^2 + 3x + 2) + \frac{2}{x+1}$$


18) $(x^4 - x^3 + 2x^2 - 3x + 5) \div (x-2)$

$$\begin{array}{r} x^3 + x^2 + 4x + 5 + \frac{15}{x-2} \\ x-2 \overline{) x^4 - x^3 + 2x^2 - 3x + 5} \\ \underline{x^4 - 2x^3 + 4x^2 - 8x + 10} \\ 3x^3 - 2x^2 - 11x - 5 \\ \underline{3x^3 - 6x^2 + 6x - 10} \\ 9x^2 - 13x + 5 \\ \underline{9x^2 - 18x + 18} \\ 5x - 13 \end{array}$$



$4x^4 + 5x^3 + 2x^2 - 1$

$$\begin{array}{r} 4x^3 + x^2 + x - 1 \\ x+1 \overline{) 4x^4 + 5x^3 + 2x^2 + 0x - 1} \\ \underline{4x^4 + 4x^3 + 4x^2 + 4x + 1} \\ -x^3 + 2x^2 - 4x - 2 \\ \underline{-x^3 - x^2 - x - 1} \\ 3x^2 - 3x - 1 \\ \underline{3x^2 + 3x + 3} \\ -6x - 4 \end{array}$$


$2x^2 + 5x + 3$

$$\begin{array}{r} 2x^2 + 5x + 3 \\ x+3 \overline{) 2x^3 + 11x^2 + 18x + 9} \\ \underline{2x^3 + 6x^2 + 9x + 9} \\ 5x^2 + 18x \\ \underline{5x^2 + 15x + 15} \\ 3x + 9 \\ \underline{3x + 9} \\ 0 \end{array}$$

$(x+3)(2x^2+5x+3)$



$10x^2 + 47x + 108 + \frac{221}{x-2}$

$$\begin{array}{r} 10x^2 + 47x + 108 + \frac{221}{x-2} \\ x-2 \overline{) 10x^3 + 27x^2 + 14x + 5} \\ \underline{10x^3 - 20x^2 + 20x - 4} \\ 47x^2 + 14x + 9 \\ \underline{47x^2 - 94x + 94} \\ 108x + 5 \\ \underline{108x - 216} \\ 221 \end{array}$$
