

Unit 7 Test Study Guide

Polynomials & Factoring

Writing Polynomials in Standard Form

<p>1. $a^2 + 3a^4 - 7a + 2a^3 - 4$</p> $3a^4 + 2a^3 + a^2 - 7a - 4$	<p>2. $8y^3 - 3xy^2 - x^2y + 2x^3$</p> $2x^3 - x^2y - 3xy^2 + 8y^3$
--	--

Classifying Polynomials

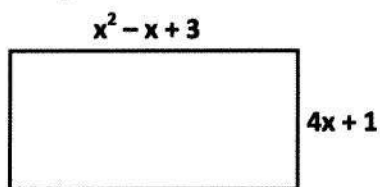
<p>3. $3x + 12$</p> <p>Linear Binomial</p>	<p>4. 24</p> <p>Constant Monomial</p>
<p>5. $-7x^2 + 4x + 1$</p> <p>Quadratic Trinomial</p>	<p>6. $3x^4 - x^3 + 5x^2 + x - 7$</p> <p>Quartic Polynomial</p>

Simplifying Polynomials

<p>7. $(2x^2 + 3x + 2) - (x^2 - 4x - 1)$</p> $x^2 + 7x + 3$	<p>8. $2a(5a^2 - 7b^3)$</p> $10a^3 - 14ab^3$
<p>9. $5c^2d(9c^2d^2 - 4c^3d - 2)$</p> $45c^4d^3 - 20c^5d^2 - 10c^2d$	<p>10. $-4y(5y - 11) - 2y(3y + 10)$</p> $-20y^2 + 44y - 6y^2 - 20y$ $-26y^2 + 24y$
<p>11. $(x - 1)(4x - 3)$</p> $4x^2 - 3x - 4x + 3$ $4x^2 - 7x + 3$	<p>12. $(5y - 1)^2$</p> $(5y - 1)(5y - 1)$ $25y^2 - 5y - 5y + 1$ $25y^2 - 10y + 1$
<p>13. $(2x + 5y)(x - 3y)$</p> $2x^2 - 6xy + 5xy - 15y^2$ $2x^2 - xy - 15y^2$	<p>14. $(x + 4)(5x - 2) - 2x^2$</p> $5x^2 - 2x + 20x - 8 - 2x^2$ $3x^2 + 18x - 8$
<p>15. $\frac{-8x^5 + 28x^4 - 4x^3}{4x^3}$</p> $-2x^2 + 7x - 1$	<p>16. $\frac{27c^4d^7 + 15c^3d^5}{3c^2d^3}$</p> $9c^2d^4 + 5cd^2$

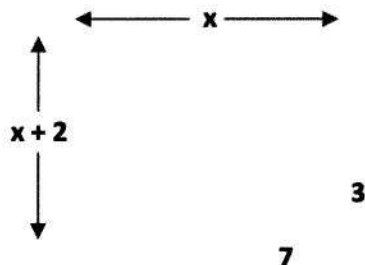
Geometric Applications

17. Write an expression to represent the area of the rectangle.



$$\begin{aligned}
 A &= (4x+1)(x^2-x+3) \\
 &= 4x^3 - 4x^2 + 12x + x^2 - x + 3 \\
 &= 4x^3 - 3x^2 + 11x + 3
 \end{aligned}$$

18. Write an expression to represent the area of the shaded region.



$$\begin{aligned}
 A &= x(x+2) - 2 \\
 &= x^2 + 2x - 2
 \end{aligned}$$

Factoring

19. $54x^3y - 18x^2y^2 + 27xy^2$

$$9xy(6x^2 - 2xy + 3y)$$

20. $9x^2 - 49y^2$

$$(3x+7y)(3x-7y)$$

21. $64y^4 - 16y^6$

$$\begin{aligned}
 &16y^4(4 - y^2) \\
 &16y^4(2+y)(2-y)
 \end{aligned}$$

22. $n^3 - 5n^2 - 50n$

$$\begin{aligned}
 &n(n^2 - 5n - 50) \\
 &n(n-10)(n+5)
 \end{aligned}$$

23. $(4x^3 + 12x^2) - (25x - 75)$

$$\begin{aligned}
 &4x^2(x+3) - 25(x-3) \\
 &(x+3)(4x^2 - 25) \\
 &(x+3)(2x+5)(2x-5)
 \end{aligned}$$

24. $3x^2 - 57x + 180$

$$\begin{aligned}
 &3(x^2 - 19x + 60) \\
 &3(x-15)(x-4)
 \end{aligned}$$

25. $3m^2 - m - 14$

$$\begin{aligned}
 &m^2 - m - 56 \\
 &\frac{(m-8)(m+7)}{4} \quad (m-2)(4m+7)
 \end{aligned}$$

26. $8x^2 + 16x - 10$

$$\begin{aligned}
 &2(x^2 + 8x - 5) \\
 &2(x^2 + 8x - 20) \quad 2(2x+5)(2x-1) \\
 &2(x+5)(x-2)
 \end{aligned}$$

27. If the area of a rectangle can be represented by $x^2 - 5x - 14$, what expressions could represent the dimensions of the rectangle?

$$\begin{aligned}
 &\downarrow \quad \star A = L \cdot W \\
 &(x-7)(x+2)
 \end{aligned}$$

Dividing Polynomials

28. $(x^2 - 14x + 48) \div (x - 6)$

$$\begin{array}{r}
 \cancel{(x-6)} \cancel{(x-8)} \\
 \hline
 x-6 \\
 \hline
 \boxed{x-8}
 \end{array}$$

29. $(x^2 - 9) \div (x - 3)$

$$\begin{array}{r}
 \cancel{(x+3)} \cancel{(x-3)} \\
 \hline
 x-3 \\
 \hline
 \boxed{x+3}
 \end{array}$$

30. $\frac{(x^2y + x^2z - 5y - 5z)}{y+z}$

$$\begin{array}{r}
 x^2(y+2) - 5(y+2) \\
 \cancel{(y+2)} \cancel{(x^2-5)} \\
 \hline
 \cancel{y+z} \quad \boxed{x^2-5}
 \end{array}$$