1. Simplify the expression. $(\xi^{15} \cdot s^{-17})^{11}$

A. $\xi^{-38}s^{-6}$

B. $\xi^{157}s^{-195}$

C. $\xi^{-151}s^{201}$

D. $\xi^{21}s^{-11}$

E. $\xi^{26}s^{-6}$

F. $\xi^{165}s^{-187}$

G. $\xi^{-175}s^{177}$

H. $\xi^{-29}s^{3}$

2. Simplify the expression. $\left(\frac{10p^9x^9}{9p^5x^3}\right)\left(\frac{6p^6x^8}{14p^4x^2}\right)$

A. $\frac{10}{21}p^{16}x^{18}$

B. $\frac{27}{140}p^6x^{18}$

C. $\frac{27}{140}p^6x^{12}$

D. $\frac{10}{21}p^6x^{12}$

E. $\frac{27}{140}p^{16}x^{12}$

F. $\frac{27}{140}p^{16}x^{18}$

G. $\frac{10}{21}p^6x^{18}$

H. $\frac{10}{21}p^{16}x^{12}$

3. Simplify the expression. $\frac{\gamma^7 \phi^8}{\gamma^2 \phi^4}$

A. $\frac{\gamma^5}{\phi^4}$

B. $\frac{\phi^4}{\gamma^5}$

C. $\frac{1}{\gamma^9 \phi^{12}}$

D. $\gamma^5 \phi^4$

E. $(\gamma \phi)^9$

F. $\gamma \phi^9$

G. $\gamma^9 \phi^{12}$

H. $\frac{1}{\gamma^5 \phi^4}$

4. Write the expression in expanded form. $(6x + y)^4$

A. $(6x + y) \cdot (6x + y) \cdot (6x + y) \cdot (6x + y) \cdot (6x + y) \cdot (6x + y) \cdot (6x + y) \cdot (6x + y)$

B. $6x + y + 6x + y + 6x + y + 6x + y$

C. $-6x + y^4$

D. $(6x + y) \cdot (6x + y) \cdot (6x + y) \cdot (6x + y)$

E. $24x + y^4$

F. $6x + y + 6x + y + 6x + y + 6x + y + 6x + y + 6x + y + 6x + y + 6x + y$

5. Write the expression in exponential form. $(s+t) \cdot (s+t) \cdot (s+t) \cdot (s+t) \cdot (s+t)$

A. $5s + t^5$

B. $5(s+t)$

C. $5s + t$

D. $s + t^5$

E. $(s+t)^5$

F. $1s + t^4$

6. Factor the following quadratic polynomial. $r^2 + 2r + 12$

A. $(r - 3)(r - 5)$

B. $(r + 3)(r + 4)$

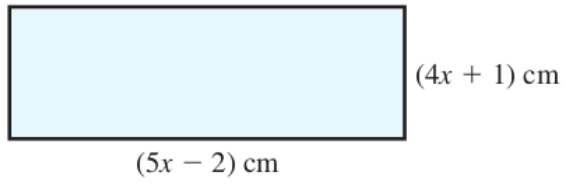C. $(r + 3)(r + 5)$

D. $(r - 3)(r - 4)$

E. $(r + 2)(r - 6)$

F. $(r - 3)(r + 5)$

G. Not factorable. This trinomial is prime.

H. $(r - 3)(r + 4)$

7. Write a polynomial for the area of the figure below.

$(4x + 1)$ cm

$(5x - 2)$ cm

A. $20x^2 - 3x + 2$

B. $20x^2 - 3x - 1$

C. $20x^2 + 3x - 2$

D. $20x^2 + 3x + 2$

E. $20x^2 - 3x - 2$

8. Multiply the polynomials. $(4y^2 - y - 8)(2y^2 - 9y)$

A. $8y^4 - 38y^3 - 7y^2 + 72y$

B. $8y^4 - 36y^3 - 7y^2 + 72y$

C. $8y^4 - 38y^3 - 11y^2 + 72y$

D. $8y^4 - 38y^3 - 7y^2 + 72y - 5$

E. $8y^4 - 38y^3 - 7y^2 + 70y$

9. Completely factor the polynomial using the strategy outlined in Section 6.5 in your textbook.

$$20p^4 + 9p^3\beta - 18p^2\beta^2$$

A. $(p^2 - 1)(20p + 3\beta)(p - 6\beta)$

B. $(p^2 + 1)(20p + 3\beta)(p - 6\beta)$

C. $(p^2 + 1)(4p - \beta)(5p + 18\beta)$

D. $4p^2(20p - 3\beta)(p + 6\beta)$

E. $4p^2(4p + 3\beta)(5p - 6\beta)$

F. $p^2(4p - 3\beta)(5p - 6\beta)$

G. $p^2(4p - 3\beta)(5p + 6\beta)$

H. $(p^2 - 1)(4p + \beta)(5p - 18\beta)$

10. Factor the polynomial by grouping. $\xi\gamma + \xi u + 7\gamma + 7u$

A. $(\gamma + 7)(\xi + u)$

B. $(u - 7)(\gamma + \xi)$

C. $(\xi + u)(\gamma + 7)$

D. $(u + 7)(\gamma + \xi)$

E. $(\gamma + 7)(\xi - u)$

F. $(\xi + \gamma)(7 + u)$

G. $(\xi + 7)(\gamma + u)$

H. $(\xi - 7)(\gamma + u)$

11. Factor the following quadratic polynomial. $5\gamma^2 - 12\gamma - 8$

A. $(5\gamma + 1)(\gamma - 8)$

B. $(5\gamma + 2)(\gamma + 4)$

C. $(5\gamma - 4)(\gamma - 4)$

D. Not factorable. This trinomial is prime.

E. $(5\gamma - 1)(\gamma + 8)$

F. $(5\gamma - 8)(\gamma - 8)$

G. $(5\gamma + 1)(\gamma + 8)$

H. $(5\gamma - 2)(\gamma + 4)$

12. Solve the equation. $u^2 + 16u + 63 = 0$

A. $u = -4$ or $u = -2$

B. $u = -7$ or $u = -10$

C. $u = -9$ or $u = -7$

D. $u = 7$ or $u = 10$

E. $u = 5$ or $u = 3$

F. $u = 4$ or $u = 2$

G. $u = -5$ or $u = -3$

H. $u = 9$ or $u = 9$

13. Multiply the polynomials. $(5x^2 + 4)(5x^2 - 4)$

A. $25x^4 + 16$

B. $25x^4 - 40x^2 + 16$

C. $25x^2 + 40x^2 - 16$

D. $25x^4 - 16$

E. $16x^4 - 25$

14. The polynomial expression $A^2 + B^2$ is

A. a square of a difference

B. a sum of two squares

C. a square of a sum

D. a difference of two squares

15. Subtract the polynomials. $(-6s^2 - 2s - 8) - (-5s^2)$

A. $8s^4 - 2s^3 - s^2 - 2s - 8$

B. $8s^4 + 2s^3 - 12s^2 - 2s - 8$

C. $2s^2 - 2s - 8$

D. $-s^2 - 2s - 6$

E. $-s^2 - 2s - 8$

F. $-s^2 - 3s - 8$

G. $6s^3 - s^2 - 2s - 8$

H. $-8s^4 - s^2 - 2s - 8$

16. Subtract the polynomials. $(-4v + 3) - (-6v + 5)$

A. $-3v^4 + 4v^3 + 2v - 2$

B. $-3v^4 - 4v^3 + 2v - 2$

C. $3v^4 + 2v - 2$

D. $2v + 8$

E. $v^2 + 2v - 2$

F. $6v - 2$

G. $2v - 2$

H. $3v^3 + 2v - 2$

17. Factor out the GCF. $(14a + 9)(15w) - (14a + 9)(8p)$

A. $(14a + 9)(15w + 8p)$

B. $(14a + 9)(15w - 8p)$

C. $(8p + 9)(14a + 15w)$

D. $(14a - 9)(15w + 8p)$

E. $(15w)(8p + 9 + 14a)$

F. $(15w)(14a + 9 - 8p)$

G. $(8p)(14a + 9 + 15w)$

H. $(14a)(8p + 9 + 15w)$

18. Factor out the GCF. $3x^4\phi^3 - 9x^2\phi$

A. $3x\phi^4(2x^4\phi - 2)$

B. $3x^2\phi(x^2\phi^2 - 3)$

C. $x^3\phi(2x^4\phi^4 - 2)$

D. $x^2\phi^2(2x^3 - 2\phi)$

E. $x^2\phi^3(2x - 2\phi^4)$

F. $x^2\phi^3(4x^2 - \phi^2)$

G. $x^3\phi^2(4x^2 - \phi^3)$

H. $x^3\phi(1 - 2x^4\phi^4)$

19. Completely factor using the forms for perfect square trinomials. $25b^2 + 20b + 4$

A. $(2b + 5)(2b + 3)$

B. $(8b + 3)(6b + 4)$

C. $(8b + 2)(6b + 2)$

D. $(5b + 1)(5b + 4)$

E. Not factorable. This trinomial is prime.

F. $(25b + 2)(b + 2)$

G. $(5b + 2)(5b + 2)$

H. $(5b + 3)(5b + 4)$

20. Factor the polynomial. $64z^2 - 25$

A. $(8z + 5)(8z - 5)$

B. Not factorable.

C. $(64z + 5)(8z - 25)$

D. $(64z - 5)(8z - 25)$

E. $(8z - 5)(8z - 5)$

F. $(64z + 5)(8z + 25)$

G. $(8z + 5)(8z + 5)$

H. $(5z + 2)(7z + 4)$

Answers

1. F.

2. D.

3. D.

4. D.

5. E.

6. G.

7. E.

8. A.

9. G.

10. G.

11. D.

12. C.

13. D.

14. B.

15. E.

16. G.

17. B.

18. B.

19. G.

20. A.