P6: Factoring

1. One of the factors of $3y^3 + 15y^2 - 12y - 60$ is

A) $y + 2$

B) $y^2 - 2$

C) $y^2 + 4$

D) $y - 5$

E) $y - 4$

2. If $4x^2 + 36x + C = (ax + b)^2$, then $a + b =$

A) 11

B) 7

C) 9

D) -7

E) -9

3. One of the factors of $(2x-1)^3-1$ is

A) $4x^2-2x+1$

B) $2x$

C) $2x-1$

D) $x-2$

E) $4x^2+2x+1$

4. $\frac{3(x^2+3)^{-1/3}-2x^2(x^2+3)^{-4/3}}{(x^2+3)^{-4/3}} =$

A) x^2+9

B) $3(1+x)^{4/3}$

C) $\frac{3}{(1+x)^{4/3}}$

D) $(2x+3)(1+x)^{4/3}$

E) $\frac{2x+3}{(1+x)^{4/3}}$

5. If $(2x-1)^3+8=(2x+1)(mx^2+nx+p)$, then $m+n+p$

A)3

B) 7

C) 4

D) 1

E) 6

6. If the polynomial $27y^3+1$ factors into $(3y+1)(My^2+Ny+1)$, then $M+N=$

A) 6

B) 12

C) 15

D) 3

E) 9

7. One factor of $2t^{3/2} - 7t^{1/2} - 4t^{-1/2}$ is

A) $2t + 1$

B) $2t - 1$

C) $t - 2$

D) $t + 2$

E) $t + 4$

8. One factor of the polynomial $q^2 - p^2 + 4p - 4$, is

A) $(q - p + 2)$

B) $(q - p - 2)$

C) $(q + p + 1)$

D) $(q - p)$

E) $(q + p)$

9. One factor of the polynomial $(x^2 - 1)^2 + (x^2 - 1) - 12$ is

A) $x + 2$

B) $x - 1$

C) $x + 1$

D) $x + 3$

E) $x - 3$

10. One factor of $a^2 + 4b^2 + 4b - 4ab - 2a$, is

A) $a - 2b - 2$

B) $a + 2b + 2$

C) $a + 2b - 2$

D) $a - 2b + 2$

E) $a - b - 1$

11.One factor of $24 + 3(x-1)^3$, is

A) $x^2 - 4x + 7$

B) $x^2 - 4x - 7$

C) $x^2 - 2x + 7$

D) $x^2 - 6x + 7$

E) $x^2 + x + 9$

12. If the expression $64 + (x-3)^3$ factors into $(x+1)(x^2 + Ax + B)$, then $A + B =$

A) 27

B) -27

C) 47

D) -47

E) -37

13. One of the factors of $4x^3 + 4x^2y - 9xy^2 - 9y^3$ is equal to

A) $2x - 3y$

B) $x - y$

C) $x - 3y$

D) $2x + y$

E) $2x - y$

14. I the expression $x^{4n} - 1$ factors into $x^{4n} - 1 = (x^n - 1)A$ then A is equal to

A) $(x^n + 1)(x^{2n} + 1)$

B) $(x^n - 1)(x^{2n} + 1)$

C) $(x^n + 1)(x^n - 1)$

D) $x^{3n} + 1$

E) $x^{2n} + 1$

15.One factor of $6(4x^2 - 12xy + 9y^2) + 7(2x - 3y) - 3$ is

A) $6x - 9y - 1$

B) $4x + 6y - 1$

C) $6x - 9y + 3$

D) $4x - 6y - 1$

E) $6x - 9y - 3$

16.One of the factors of $3x^{5/2} - 9x^{3/2} + 6x^{1/2}$ is

A) $x - 1$

B) $x + 1$

C) $x + 2$

D) $3x - 1$

E) $3x - 2$

17.One factor of $y^4 + 64$ is:

A) $y^2 + 4y + 8$

B) $y^2 + 4y - 8$

C) $y^2 - 4y - 8$

D) $y^2 + 8$

E) $y^2 - 8$

18.One factor of $18x^5 + 15x^4z - 75x^3z^2$ is

A) $3x - 5z$

B) $2x - 5z$

C) $3x + 25z$

D) $6x - 5z$

E) $3x - 25z$

19.One factor of $27z^9 + 64y^{12}$ is

A) $9z^6 - 12z^3y^4 + 16y^8$

B) $9z^6 + 12z^3y^2 + 16y^4$

C) $9z^6 - 12z^3y^4 + 4y^8$

D) $9z^6 + 12z^3y^4 + 8y^4$

E) $9z^6 - 12z^3y^4 + 2y^8$

20. The sum of the two factors of the polynomial $p^2q^2 - 10 - 2q^2 + 5p^2$, is

A) $p^2 + q^2 + 3$

B) $p^2 + q^2 - 7$

C) $p^2 - q^2 + 3$

D) $p^2 - q^2 - 7$

E) $p^2 + q^2 - 3$

21.One factor of $(3a+5)^2+6(3a+5)-16$ is

A) $(3a+13)$

B) $(3a-2)$

C) $(3a-3)$

D) $(3a-16)$

22.Sum of the factors of $(2a+1)^3-8$ is equal to

A) $4a^2+10a+6$

B) $4a^2-6a+10$

C) $4a^2+10a+8$

D) $4a^2+6a-10$

E) $4a^2+10a-6$

23. One factor of $x^2y^2 - 10xy + 25 - a^4$ is

A) $(xy + a^2 - 5)$

B) $(xy - a^2 + 5)$

C) $(xy + a^2 + 5)$

D) $(xy + a + 5)$

E) $(xy - a - 5)$

24.Factor $(x^2 + 1)^{1/2} + 2(x^2 + 1)^{-1/2}$

A) $\frac{x^2+3}{\sqrt{x^2+1}}$.

25.Factor $2x^{1/3}(x-2)^{2/3} - 5x^{4/3}(x-2)^{-1/3}$

A) $\frac{(-3x-4)\sqrt[3]{x}}{\sqrt[3]{x-2}}$

26. One of the factors of $(2x+3)^{\frac{3}{2}} - (2x+3)^{\frac{1}{2}} - 2(2x+3)^{-\frac{1}{2}}$

A) $2x+1$

B) $x-1$

C) $x-2$

D) $x+1$

E) $2x+5$

27.One of the factors of $9 + x^3y^2 - 9x^3 - y^2$

A) $x^2 + x + 1$

B) $x^2 - x + 1$

C) $y - 9$

D) $y + 9$

E) $y^2 + y + 3$

28.One of the factors of $3x^3 - 2x^2 - 12x + 8$ is:

A) $x + 2$

B) $3x + 2$

C) $x - 4$

D) $x + 4$

E) $x - 1$

29.The expression $\left(x+\frac{1}{x}\right)^2-\left(x-\frac{1}{x}\right)^2$ simplifies to:

A) 4

B) $\frac{4}{x}$

C) $-\frac{4}{x}$

D) 0

E) 8

30.One factor of the polynomial $8x^4-8x^3+x-1$, is

A) $4x^2+2x-1$

B) $4x^2-x-2$

(C) $4x^2-2x+1$

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

A) x^2-1

B) 1

C) x^2

D) x^2+1

E) x^2+2

32. One factor of $y^3-x^2y+x^2-y^2$, is

A) $y+x$

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

A) $1 + x^2$

34.One factor of $54 + 2(2x + 1)^3$ is

A) $(x + 2)$

35.One factor of $y^{\frac{1}{4}} + y^{-\frac{3}{4}} - 2y^{-\frac{7}{4}}$ is

A) $(y - 2)$

B) $(y - 3)$

C) $(y + 3)$

D) $(y - 1)$

36.If $4x^2y^2 - 36xy + k + 1$ is a perfect square trinomial, then $k =$

A) 82

B) 48

C) 8

D) 80

E) 24

37.One of the factors of $4y^5 - y^3 + 4y^2 - 1$ is

A) $y^2 - y + 1$

B) $y + 2$

C) $y - 1$

D) $y^2 + y + 1$

E) $y - 2$

38.If $18(x + 1)^{-1/2} + 2(x + 1)^{1/2} = \frac{A(x+B)}{(x+1)^{1/2}}$, then $A + B =$

A) 10

B) -2

C) 2

D) 8

E) 12