**Factor**

1. *x*2 + 3*x* + 2 2. *x*2 - *x* - 2

3. *x*2 + *x* - 6 4. *a*2 + *a* - 12

5. *a*2 - 2*a* - 35 6. *b*2 + 8*b +* 16

7. *b*2 + 7*b* - 8 8. *y*2 - *y* - 6

9. *x*2 - 4 *x* - 45 10. *y*2 - 8 *y* + 15

**Factor**

1. 2x2 + 6 x + 4

2. 4a2 - 12a + 8

3. 10a2 + 10a - 20

4. 7a2 - 14a - 21

5. 3y2 - 15y + 18

6. a3 - 5a2 + 4a

7. x4 - 15x3 + 56x2

8. b4 - 3b3 - 10b2

9. 2a3 + 8a2 - 64a

10. 3a3 - 9a2 - 54a

|  |  |
| --- | --- |
| **Factor**1. 2x2 + 3x + 1 2. 2y2 + 7 y + 33. 2b2 - 11b + 5 4. 3b2 - 13b + 45. 2t2 - t - 10  | 6. 3p2 - 16 p + 57. 12 y2 - 7 y + 1 8. 2t2 + 5t - 129. 5 y2 - 22 y + 8 10. 3p2 + 22 p - 16 |
| **Factor**1. x2 - 25 2. x2 - 1003. 9x2 - 1 4. 64x2 - 95. 36y2 + 49  | 6. x2 - 6 x + 97. y2 + 14 y + 49 8. 5a2 - 20a - 259. 2x2 - 72 10. 4x2 - 16 |
| **Simplify**1. $ \sqrt{125n}$3. $\sqrt{216v}$5. $\sqrt{216k^{4}}$7. $\sqrt{80p^{3}}$9. $\sqrt{147m^{3}n^{3}}$11. $\sqrt{16u^{4}v^{3} }$13. $\sqrt{75x^{2}y}$ | 2. $\sqrt{512k^{2}}$4. $\sqrt{48k^{2}}$6. $\sqrt{512m^{3}}$8. $\sqrt{100v^{3}}$10. $\sqrt{45p^{2}}$12. $\sqrt{64m^{3}n^{3}}$14. $\sqrt{28x^{3}y^{3}}$ |

**Divide and rationalize the denominator:**

|  |  |
| --- | --- |
| 1. $\frac{2}{\sqrt{3}}$2. $\frac{5}{\sqrt{10}}$3. $\frac{5}{3\sqrt{7}}$4. $- \frac{21}{10\sqrt{3}}$5. $\frac{5}{6+ \sqrt{3}}$6. $\frac{3\sqrt{5}}{9-\sqrt{5}}$7. $\frac{3}{3- \sqrt{3}}$8. $\frac{12}{4- \sqrt{2}}$9. $\frac{1}{3\sqrt{2}}$ | 10. $\frac{\sqrt{5}- \sqrt{3}}{\sqrt{5} + \sqrt{3}}$11. $\frac{3}{4+ \sqrt{5}}$12. $\frac{5}{\sqrt{7}+4}$13.$\frac{2\sqrt{7}}{4+ \sqrt{5}}$14. $\frac{4\sqrt{5}}{-4+ \sqrt{5}}$15. $\frac{\sqrt{2}+ \sqrt{3}}{\sqrt{2}- \sqrt{3}}$16. $\frac{\sqrt{15}+ \sqrt{6}}{\sqrt{15}- \sqrt{6}}$17.$\frac{2}{3- \sqrt{3x^{2}}}$18. $\frac{3}{-4k^{2}-5\sqrt{k^{3}}}$ |

**Identify the error in the following questions.**

1. $\frac{\sqrt{4}}{4\sqrt{5}}$

$\frac{\sqrt{4}}{4\sqrt{5}}$ $∙ \frac{\sqrt{5}}{\sqrt{5}}$ $= \frac{\sqrt{20}}{4\sqrt{25}}= \frac{4\sqrt{5}}{20}= \frac{\sqrt{5}}{5}$

2. $\frac{\sqrt{5}}{5+ \sqrt{2}}$

$\frac{\sqrt{5}}{5+ \sqrt{2}} ∙ \frac{5+ \sqrt{2}}{5+ \sqrt{2}} = \frac{5\sqrt{5}+ \sqrt{10}}{27}$

3. $\frac{2}{3- \sqrt{3x^{2}}}$

$\frac{2}{3- \sqrt{3x^{2}}} ∙ \frac{3+ \sqrt{3x^{2}} }{3+ \sqrt{3x^{2}}} = \frac{6+\sqrt{3x^{2}} }{9-3x^{2}}$

4. $\frac{-4+ \sqrt{3}}{-1-2\sqrt{5} }$

$\frac{-4+ \sqrt{3}}{-1-2\sqrt{5} } ∙ \frac{-1+2\sqrt{5} }{-1+2\sqrt{5} } = \frac{4+2\sqrt{15}}{-19}$

|  |  |
| --- | --- |
| **Solve for the variable.**1) −20 = −4x − 6x 2) 6 = 1 − 2n + 5 3) 8x − 2 = −9 + 7x 4) a + 5 = −5a + 5 5) 2(4x − 3) − 8 = 4 + 2x **Solve for the variable** | 6) 3n − 5 = −8(6 + 5n) 7) −(1 + 7x) − 6(−7 − x) = 36 8) −3(4x + 3) + 4(6x + 1) = 43 9) 27a − 22 = −4(1 − 6a) 10) −5(1 − 5x) + 5(−8x − 2) = −4x − 8x |
| 1) 2n 3 − n 2 − 136n = 0 2) 5x3 + 4x2 − 57x = 0 3) 6n4 + 9n3 + 3n2 = 0 4) 2n3 + 24n2 − 56n = 0 5) x3 − x = 0  | 6) 2r 5 − 6r 4 − 56r 3 = 0 7) 12b3 − 2b2 − 30b = 0 8) 4r4 − 64r2 = 0 9) 12b3 + 6b2 = 18b10) 6v3 − 42v = −4v2 |

**Identify the error in the following questions.**

1.  x3 + 5x2 = 3x + 45

6x2 = 3x + 45

6x2 - 3x – 45 = 0

3(2x2  - x – 15) = 0

3(x – 3) (2x + 5) = 0

x= 3, -5/2

2. 6x3 – 16x = 4x2

6x3 – 4x2 - 16x = 0

2x(3x2 – 2x – 4) = 0

2x(3x + 4)(x - 2) = 0

x= 2, 0, -4

3. 3x2(3x + 4) = 12x(x + 3)

9x3 + 12x2 = 12x2  + 36x

9x3 – 36x = 0

9x(x2 – 4) = 0

x= 0, 4