

Simplify. Assume $x > 0$.

1. $\sqrt{3x^2 + 13x^2}$

2. $\sqrt{8x^2 + 12x^2}$

3. $\sqrt{17x^2 + 55x^2}$

Which expression is equivalent to the following.

4. i^{23}

5. i^{37}

6. i^{62}

7. **What is the sum of $5x^2 - 3$ and $2x^2 - 3x^3$?**

8. **What is $(3x^4 - 3x)$ minus $(3x - 3x^4)$?**

9. **What is $-6x^4 - 3x - 8x^5$ subtracted from $3 - 6x^5 - 8x^4$?**

Factor completely.

10. $2x^2 - 8x - 42$

11. $5x^2 - 45x + 90$

12. $3x^2 - 9x - 12$

Find the zeros.

13. $f(x) = x^4 - 7x^2 + 12$

14. $f(x) = x^3 - 2x^2 - 3x + 6$

15. $f(x) = x^4 - 2x^3 - 4x^2 + 8x$

Find the roots.

16. $x^4 + 2x^2 - 15 = 0$

17. $x^3 + 3x^2 + 4x + 12 = 0$

18. $x^4 + 6x^2 = 16$
