|  |  |
| --- | --- |
| 1. Factor completely: $$x^{2}-2x-24$$ | 2. Factor completely:$$2x^{2}+6x-36$$ |
| 3. Factor completely:$$x^{2}+64$$ | 4. Factor completely:$$50x^{2}-8$$ |
| 5. Factor completely:$$2x^{2}-9x +10$$ | 6. Factor completely:$$3x^{2}+4x-15$$ |
| 7. Factor completely:$$x^{3}-2x^{2}-9x+18$$ | 8. Factor completely:$$9x^{2}+100$$ |
| 9. Factor completely:   | 10. Simplify completely:$$\left(14+4i\right)-(11-8i)$$ |
| 11. Simplify completely:$$(3-6i)(5+7i)$$ | 12. Simplify completely:$$(3-6i)^{2}$$ |
| 13. Simplify completely:$$\frac{3-2i}{5+i}$$ | 14. Simplify completely:$$-\frac{4}{5i}$$ |

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| 15. For the following graph, find the domain, range, intervals of increase and decrease, extrema, y-intercept, the roots, the axis of symmetry, and the end behavior.1Domain:\_\_\_\_\_\_\_\_\_\_\_\_ Range:\_\_\_\_\_\_\_\_\_\_\_\_INC:\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DEC:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Extrema:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Y-intercept:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Roots:\_\_\_\_\_\_\_\_\_\_\_\_ Axis of Sym:\_\_\_\_\_\_\_\_\_\_$$x \rightarrow \infty , f\left(x\right) \rightarrow $$$$x \rightarrow - \infty , f\left(x\right)\rightarrow $$ | 16. Sketch a graph with the following characteristics:Extrema (1, -2)Increasing $(1, \infty )$Decreasing $(-\infty , 1)$Extrema (3, 2)Roots at (1, 0) (5, 0) |
| Into which group or groups does each number go?

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Natural | Whole | Integers | Rational | Irrational | Real | Imaginary | Complex |
| -11 |  |  |  |  |  |  |  |  |
| $$\sqrt{13}$$ |  |  |  |  |  |  |  |  |
| 3 – 2i |  |  |  |  |  |  |  |  |

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