
MATH 11010: Exam #2 (Spring 2013)

1. Simplify $(4 - 5i)^2$. Write answer in the form $a + bi$, where a and b are real numbers.
2. Simplify $\frac{3 - 2i}{4 + 2i}$. Write answer in the form $a + bi$, where a and b are real numbers.
3. Solve: $5x^2 - 80x - 40 = 0$
4. Solve: $8x^6 - 14x^4 + 6x^2 = 0$
5. Solve: $2|9x - 5| + 4 = 56$
6. Solve: $9x^4 - 6x^3 + 6x^2 = 0$
7. Solve: $3(4x - 7)^2 + 36 = 0$
8. Solve: $50x^3 - 75x^2 - 6x + 9 = 0$
9. Solve: $16x^4 + 13x^2 - 3 = 0$
10. Solve: $2x^{1/2} + 3x^{1/4} - 2 = 0$
11. Solve: $\frac{4x + 7}{3x - 2} = \frac{3}{5}$
12. Solve: $(6x - 5)^2 + 7(6x - 5) + 12 = 0$
13. Solve: $\sqrt{3x + 1} + 3 = x$
14. Solve: $\frac{5x}{x - 3} - \frac{2x}{x + 1} = \frac{9x}{x - 3}$
15. Solve: $x(5x - 2) = 1$

16. Given $f(x) = 3x^2 - 18x + 7$.

- (a) Express the quadratic function in standard form.
- (b) Identify the vertex.
- (c) Identify the minimum or maximum of f . Label it as a minimum or maximum.

ANSWERS

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| 1. $-9 - 40i$ | 10. $x = \frac{1}{16}$ (NOTE: $x = 16$ does not check.) |
| 2. $\frac{2}{5} - \frac{7}{10}i$ | 11. $x = -\frac{41}{11}$ |
| 3. $x = 8 \pm 6\sqrt{2}$ | 12. $x = \frac{1}{6}, x = \frac{1}{3}$ |
| 4. $x = 0, x = \pm \frac{\sqrt{3}}{2}, x = \pm 1$ | 13. $x = 8$ (NOTE: $x = 1$ does not check.) |
| 5. $x = \frac{31}{9}, x = -\frac{7}{3}$ | 14. $x = 0, x = \frac{1}{3}$ |
| 6. $x = 0, x = \frac{1 \pm \sqrt{5}i}{3}$ | 15. $x = \frac{1 \pm \sqrt{6}}{5}$ |
| 7. $x = \frac{7 \pm 2\sqrt{3}i}{4}$ | 16. (a) $f(x) = 3(x - 3)^2 - 20$ |
| 8. $x = \frac{3}{2}, x = \pm \frac{\sqrt{3}}{5}$ | (b) $(3, -20)$ |
| 9. $x = \pm \frac{\sqrt{3}}{4}, x = \pm i$ | (c) minimum = -20 |