

Completing the Square Practice

Math 130 *Kovitz*

Complete the square. Find an equivalent equation in standard form.

1. $f(x) = 2x^2 - 8$

2. $f(x) = x^2 + 18x + 40$

3. $f(x) = 2x^2 + 12x + 15$

4. $f(x) = -6x^2 + 48x - 79$

5. $f(x) = -x^2 - x - 1$

6. $f(x) = 4x^2 - 12x + 11$

7. $f(x) = 6x^2 + 10x + 3$

8. $f(x) = -2x^2 + 9x + 1$

9. $f(x) = -5x^2 + 6x - 2$

10. $f(x) = 2x^2 - 5x + 2.625$

11. $f(x) = -\frac{3}{8}x^2 + 6x - 17$

12. $f(x) = -\frac{5}{16}x^2 + 1.25x - 2$

13. $f(x) = 3x^2 + 18x + 30$

14. $f(x) = x^2 + \sqrt{6}x + 4$

15. $f(x) = \sqrt{3}x^2 + 3$

16. $f(x) = \pi x^2 + x$

Answers below

Answers

1. It's already in standard form as given.
2. $f(x) = (x + 9)^2 - 41$
3. $f(x) = 2(x + 3)^2 - 3$
4. $f(x) = -6(x - 4)^2 + 17$
5. $f(x) = -(x + 1/2)^2 - 3/4$ or $f(x) = -(x + 0.5)^2 - 0.75$
6. $f(x) = 4(x - 3/2)^2 + 2$ or $f(x) = 4(x - 1.5)^2 + 2$
7. $f(x) = 6(x + 5/6)^2 - 7/6$ or $f(x) = (x + 5/6)^2 - 1\frac{1}{6}$
8. $f(x) = -2(x - 9/4)^2 + 89/8$ or $f(x) = -2(x - 2.25)^2 + 11.125$ or $f(x) = -2(x - 9/4)^2 + 11\frac{1}{8}$
9. $f(x) = -5(x - 3/5)^2 - 1/5$ or $f(x) = -5(x - 0.6)^2 - 0.2$
10. $f(x) = 2(x - 5/4)^2 + 1/2$ or $f(x) = 2(x - 1.25)^2 + 0.5$
11. $f(x) = -\frac{3}{8}(x - 8)^2 + 7$
12. $f(x) = -\frac{5}{16}(x - 2)^2 - \frac{3}{4}$
13. $f(x) = 3(x + 3)^2 + 3$
14. $f(x) = \left(x + \frac{\sqrt{6}}{2}\right)^2 + 5/2$ or $f(x) = \left(x + \frac{\sqrt{6}}{2}\right)^2 + 2.5$
15. It's already in standard form as given.
16. $f(x) = \left(x + \frac{1}{2\pi}\right)^2 - \frac{1}{4\pi}$