

Math 3 Worksheet 9.6-B

Name _____

Assignment

Date _____ Period _____

Find the value that completes the square and then rewrite as a perfect square.

1) $x^2 - 26x$

2) $y^2 - 4y$

3) $x^2 + 11x$

4) $p^2 + 5p$

5) $5n^2 - 10n$

6) $3r^2 + 12r$

7) $3n^2 - 18n$

8) $5p^2 - p$

Find the value that completes the square and then rewrite as a perfect square. Be sure to add to BOTH sides of the equation. You do not need to finish solving.

9) $7r^2 - 14r - 56 = 0$

10) $2b^2 - 20b + 42 = 0$

11) $5n^2 + 20n - 13 = 0$

12) $8b^2 + b - 69 = 0$

WRITING EQUATIONS Write an equation of the conic section.

13. Circle with center at $(-5, 1)$ and radius 6
14. Circle with center at $(9, -1)$ and radius 2
15. Parabola with vertex at $(-4, -3)$ and focus at $(1, -3)$
16. Parabola with vertex at $(5, 3)$ and directrix $y = 6$
17. Ellipse with vertices at $(-3, 4)$ and $(5, 4)$ and foci at $(-1, 4)$ and $(3, 4)$
18. Ellipse with vertices at $(-2, 1)$ and $(-2, 9)$ and co-vertices at $(-4, 5)$ and $(0, 5)$
19. Hyperbola with vertices at $(6, -3)$ and $(6, 1)$ and foci at $(6, -6)$ and $(6, 4)$
20. Hyperbola with vertices at $(1, 7)$ and $(7, 7)$ and foci at $(-1, 7)$ and $(9, 7)$

21. **ERROR ANALYSIS** Describe and correct the error in writing an equation of the ellipse with vertices at $(-7, 3)$ and $(3, 3)$ and co-vertices at $(-2, 6)$ and $(-2, 0)$.

Axis is horizontal; $(h, k) = (-2, 3)$;

$$a = |-7 - (-2)| = 5; b = |6 - 3| = 3;$$

$$\text{Equation: } \frac{(x - 2)^2}{25} + \frac{(y + 3)^2}{9} = 1$$



53. **CHALLENGE** A *degenerate* conic results when the intersection of a plane with a double-napped cone is not a parabola, circle, ellipse, or hyperbola.

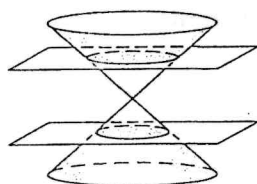


Diagram 1

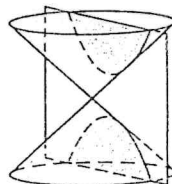


Diagram 2

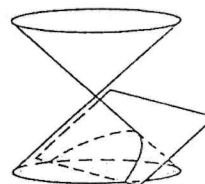


Diagram 3

- a. In Diagram 1, a plane perpendicular to the cone's axis passes through the cone, intersecting it in a circle whose radius decreases and then increases. When is the intersection not a circle? What is it?
- b. In Diagram 2, a plane parallel to the cone's axis passes through the cone, intersecting it in a hyperbola whose vertices get closer together and then farther apart. When is the intersection not a hyperbola? What is it?
- c. In Diagram 3, a plane parallel to the cone's nappe passes through the cone, intersecting it in a parabola that first gets narrower, then flips and gets wider. When is the intersection not a parabola? What is it?