Name : _____ Score : _____

Midpoint Formula

Sheet 1

Example: The endpoints of the line segment are (4, a) and (b, –1); the midpoint is (–4, 12). Find the value of the unknown.

$$\textbf{Midpoint} = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right) \Rightarrow (-4, 12) = \left(\frac{4 + b}{2}, \frac{a - 1}{2}\right)$$

$$\Rightarrow -4 = \left(\frac{4 + b}{2}\right), \; 12 = \left(\frac{a - 1}{2}\right) \Rightarrow -8 = 4 + b, \; 24 = a - 1$$

a = 25, b = –12

The endpoints and the ...e value of the unknown.

1) Endpoints : (u, –3) ...-5, 10), (n, 6)
Midpoint : (9, v) ...3, 8)

u = _____ , v = ...

3) Endpoints : (2, 5), ...9, c), (d, –1)
Midpoint : (1, 6) ...5, 9)

x = _____ ... d = _____

5) Endpoints : (q, –1) ...-6, –8), (z, 0)
Midpoint : (3, –4) ...-7, –4)

p = _____ , q = _____ z = _____

7) Endpoints : (3, –10), (–7, 8)
Midpoint : (–2, t)

t = _____

8) Endpoints : (g, 4), (11, 2)
Midpoint : (5, h)

g = _____ , h = _____