

C1 Perpendicular Bisector

1. Find the equation of the perpendicular bisector of the following points in the form $y = mx + c$.

(a) $(-1, 2)$ and $(3, 6)$.

$$y = -x + 5$$

(b) $(0, 1)$ and $(2, 5)$.

$$y = -\frac{1}{2}x + \frac{7}{2}$$

(c) $(4, 5)$ and $(1, -1)$.

$$y = -\frac{1}{2}x + \frac{13}{4}$$

(d) $(-2, 1)$ and $(7, 2)$.

$$y = -9x + 24$$

(e) $(-1, 3)$ and $(-1, 4)$.

$$y = \frac{7}{2}$$

(f) $(\frac{1}{2}, -1)$ and $(2, \frac{2}{3})$.

$$y = -\frac{9}{10}x + \frac{23}{24}$$

(g) $(2, p)$ and $(4, 0)$.

$$y = \frac{2}{9}x + \frac{p^2 - 16}{2p}$$

2. Find the equation of the perpendicular bisector of the following points in the form $0 = ax + by + c$, where a , b and c are integers.

(a) $(-1, 3)$ and $(2, 5)$. □

3. Find the intersection of the **perpendicular bisectors** of the following pairs of points.

(a) $(1, 1) \& (-1, -1)$ and $(-1, 1) \& (1, -1)$.

$$(0, 0)$$

(b) $(3, 1) \& (-1, -1)$ and $(2, 1) \& (2, 0)$.

$$(\frac{3}{4}, \frac{1}{2})$$

(c) $(1, 2) \& (1, 0)$ and $(3, 0) \& (0, 1)$.

$$(\frac{5}{3}, 1)$$

(d) $(-1, -1) \& (1, 2)$ and $(3, 0) \& (2, 1)$.

$$(\frac{3}{2}, -\frac{1}{2})$$

(e) $(-1, 3) \& (0, 1)$ and $(1, 4) \& (5, 2)$.

$$(\frac{7}{2}, 4)$$

(f) $(-1, 3) \& (1, 1)$ and $(1, 2) \& (5, 3)$.

$$(\frac{5}{2}, \frac{9}{2})$$

(g) $(-1, 0) \& (-1, 2)$ and $(0, 4) \& (5, 2)$.

$$(\frac{17}{10}, 1)$$

(h) $(0, \frac{1}{2}) \& (-1, -1)$ and $(3, 0) \& (2, 1)$.

$$(\frac{17}{20}, -\frac{23}{20})$$

(i) $(\frac{2}{3}, -\frac{1}{4}) \& (0, \frac{3}{2})$ and $(-\frac{4}{3}, -2) \& (\frac{1}{2}, -\frac{1}{3})$.

$$(-\frac{2675}{1866}, -\frac{359}{7464})$$

(j) $(0, a) \& (\frac{a}{2}, 1)$ and $(\frac{1}{2}, a) \& (1, -\frac{a}{3})$. □