1. The point at which the normal to the curve

$$y = x + \frac{1}{x}, x > 0 \tag{1}$$

is perpendicular to the line

$$3x - 4y - 7 = 0 (2)$$

is:

- (a) $(2, \frac{5}{2})$
- (b) $(\pm 2, \frac{5}{2})$
- (c) $(\frac{-1}{2}, \frac{5}{2})$
- (d) $(\frac{1}{2}, \frac{5}{2})$
- 2. The points on the curve

$$\frac{x^2}{9} + \frac{y^2}{16} = 1\tag{3}$$

at which the tangents are parallel to y-axis are:

- (a) $(0, \pm 4)$
- (b) $(\pm 4, 0)$
- (c) $(\pm 3, 0)$
- (d) $(0, \pm 3)$
- 3. For which value of m is the line

$$y = mx + 1 \tag{4}$$

a tangent to the curve

$$y^2 = 4x (5)$$

- (a) $\frac{1}{2}$
- (b) 1
- (c) 2
- (d) 3