15. Find the equation of the tangent at the point (3,1) on the circle with equation $x^2 + y^2 - 4x + 10y - 8 = 0$. What is the angle between this tangent and the positive direction of the x-axis?

16. Find the equation of the circle whose diameter is the line joining the points A(1,5) and B(-2,3).

Answers

1. a) $x = -3$ or $x = -1$
   b) $-2 + \sqrt{2} \leq x \leq 2 + \sqrt{2}$
2. a) $(0, -4), (6, 0)$
   b) $(0, \frac{4}{3}), (2, 0)$
3. $y = -x + 1$
4. $p = 2$
5. $p = \pm 12$
6. $y = 2x + 5$
7. a) $x = 1$, $y = 2$ b) $x = 3$, $y = 5$
8. $y = 2x - 2\frac{1}{2}$
9. $2x + y - 17 = 0$
   $72\frac{1}{4}$
10. $2\sqrt{5}$
11. $11\sqrt{10}$
12. $(-4, 3), (6, 8)$
13. $(-4, 1)$, $r = 2$
14. C
15. $y = -\frac{1}{6}x + \frac{2}{3}$, $\alpha = 170{,}5°$
16. $x^2 + y^2 + x - 8y + 13 = 0$