Solve the following pairs of simultaneous equations, one linear and one quadratic.

7. $y = x^2 - 4x + 6$

     $y = 3x - 4$

① Rewrite linear ... $y = 3x - 4$

② Sub in and solve $3x - 4 = x^2 - 4x + 6$

           $-3x, +4$ $x^2 - 7x + 10 = 0$

                       $(x - 2)(x - 5) = 0$

                       $x = 2$, $x = 5$

③ Sub to get pts. $x = 2 \Rightarrow y = 3(2) - 4 = 2$

    $y = 3x - 4$ pt. $(2, 2)$

                       $x = 5 \Rightarrow y = 3(5) - 4 = 11$

                       pt $(5, 11)$

Solve the following pairs of simultaneous equations, one linear and one quadratic.

8. $x^2 + y^2 - 4x + 2 = 0$ circle

     $x + y - 4 = 0$ line

① Rewrite linear $y = 4 - x$

    $y = ...$

② Sub and solve $x^2 + (4-x)^2 - 4x + 2 = 0$

                   $x^2 + 16 - 8x + x^2 - 4x + 2 = 0$

                   $2x^2 - 12x + 18 = 0$

                   $x^2 - 6x + 9 = 0$
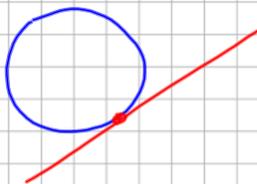
                   $(x - 3)(x - 3) = 0$

                   $x = 3$, $x = 3$

③ Sub in for points $y = 4 - x$

                   $y = 4 - 3$

                   $y = 1$

                   pt $(3, 1)$

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Solve the following pairs of simultaneous equations, one linear and one quadratic.

9. $x^2 + 4y^2 = 4$
   $x + 2y - 2 = 0$

① rewrite linear
   $x = \ldots$

$x = 2 - 2y$

② Sub and Solve

$(2 - 2y)^2 + 4y^2 = 4$

$4 - 8y + 4y^2 + 4y^2 - 4 = 0$

$8y^2 - 8y = 0$

$y^2 - y = 0$

HCF

$y(y - 1) = 0$

$y = 0 \quad , \quad y = 1$

③ Sub in for points

$x = 2 - 2y$

$y = 0 \quad \Rightarrow \quad x = 2 - 2(0) = 2 \quad \boxed{pt. (2, 0)}$

$y = 1 \quad \Rightarrow \quad x = 2 - 2(1) = 0 \quad \boxed{pt (0, 1)}$

Solve the following pairs of simultaneous equations, one linear and one quadratic.

10. $xy = 4$ Rational function
    $2x - y + 2 = 0$ linear

① Rewrite linear
   $y = \ldots$

$xy = 4$

$y = \dfrac{4}{x}$

② Sub and Solve

$x \angle CD$ ie x

$2x - \left(\dfrac{4}{x}\right) + 2 = 0$

$2x^2 - 4 + 2x = 0$

$2x^2 + 2x - 4 = 0$

$x^2 + x - 2 = 0$

$(x + 2)(x - 1) = 0$

$x = -2 \quad , \quad x = 1$

③ Sub back for pts

$y = \dfrac{4}{x}$

$x = -2 \quad \Rightarrow \quad y = \dfrac{4}{-2} = -2 \quad \boxed{pt. (-2, -2)}$

$x = 1 \quad \Rightarrow \quad y = \dfrac{4}{1} = 4 \quad \boxed{pt. (1, 4)}$