

## Sixth Set of Homework for Math 05

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**Please note:** You should fully justify your answers.

### 1 Solving Linear equations

1. Solve each of the following linear equations.

(a)  $-4x + 20 = 6x$

(b)  $2x - 7 = 5x + 8$

(c)  $5 - 4x = 7x - 5$

(d)  $7x - 3 = 2x - 3$

(e)  $-2x + \frac{5}{2} = 5x - 1$

(f)  $9 + x = -3x + 7$

(g)  $\frac{2}{3}x - 4 = 5x + \frac{7}{2}$

(h)  $2(x + 5) = 12$

(i)  $3(5 - 2x) = 4x - 7$

(j)  $4(-3x + 1) + 2 = -12x + 6$

(k)  $2(5x + 10) - 3x = -2(x + 8)$

(l)  $-5(-2x + 6) + 9 = -3(x + 11) + 13x$

(m)  $-4(3x - 6) + 2x = 5(x + 1) - 11$

(n)  $3(-5x + 8) - 3 = 2(x - 5) - 17x + 11$

(o)  $2(x - 5) + 3x - 10 = 3(-2x + 4) + 4x + 3$

(p)  $\frac{2x - 3}{4} + \frac{x}{3} = \frac{1}{6}$

(q)  $\frac{x - 4}{5} - 3 = 4x$

(r)  $\frac{3x - 6}{5} - 7x = \frac{7x + 1}{5} - 17$

(s)  $\frac{2x - 3}{5} + 2x = -\frac{2 - x}{4} - 3$

(t)  $\frac{4 - x}{5} + 3x + 2 = \frac{5x - 3}{3} + 2x + 12$

2. Find the real numbers  $a$  for which the following equation is an identity:

$$2(7x + 3) - 2a = 4(3x - 3) + 2x - 6$$

3. Find the real numbers  $a$  for which the following equation (in  $x$ ) has no solutions.

$$3(2x - 5) = 6x + a$$

4. Find  $a$  and  $b$  if the following equation is an identity:

$$2(ax - 5) - 3 = 7x + b$$