(a) Solve for x and y

$$x + 2y = 3$$
$$x^2 - y^2 = 24$$

I $x = -2y + 3$ ...(7m)

$(-2y+3)^2 - y^2 = 24$ ...(8m)

$4y^2 - 12y + 9 - y^2 = 24$

$3y^2 - 12y - 15 = 0$ ...(11m)

$y^2 - 4y - 5 = 0$

$(y - 5).(y + 1) = 0$ ...(14m)

$y = 5$ and $y = -1$ ...(17m)

$\Rightarrow x = -7$ and $x = 5$. ...(20m)

(b) $u^2 + 2as = v^2$

(i) Find the value of a, when $u = 10, s = 30$ and $v = 20$.

I $10^2 + 2a(30) = 20^2$

$100 + 60a = 400$

$60a = 300$

$a = 5$

(ii) Horst thinks that you could get the correct answer if you let $u = 1, s = 3$ and $v = 2$ and then multiply your answer by 10. Is he correct?

Yes…

$$1^2 + 2a(3) = 2^2$$
$$1 + 6a = 4$$
$$6a = 3$$
$$a = \frac{1}{2}$$
$$\frac{1}{2}x10 = 5$$