3) $\text{Area}_{ABC} = \frac{\text{height} \times \text{Base}}{2}$

$= \frac{AI \times BC}{2}$

$\text{Area} = \frac{(\sqrt{10}+2)(4\sqrt{10})}{2}$

$= (20 + 4\sqrt{10})\ cm^2$.

Shaded area $= \text{Area}_{ABC} - \text{Area}_{EFGH}$

$= 20 + 4\sqrt{10} - 10 - 4\sqrt{6}$

$= (10 + 4\sqrt{10} - 4\sqrt{6})\ cm^2$.

4) For EFGH to be a square then $p(x) \equiv q(x)$

$p(x) = (a-1)x^3 + (1-2b)x^2 + cx + d + 1$

$q(x) = 3x^2 + 5x + 2$.

$p(x) \equiv q(x)$ then.

coefficient of x^3 : $a - 1 = 0$; $\boxed{a = 1}$

coefficient of x^2 : $1 - 2b = 3$; $\boxed{b = -1}$

" of x $\boxed{c = 5}$

" " x^0 : $d + 1 = 2$ $\boxed{d = 1}$

4th exercise:

1) Drawn.