5) $A(x) = \sqrt{\frac{16}{x^2} + \frac{8}{x} + 1}$

$= \sqrt{\frac{16 + 8x + x^2}{x^2}}$

$= \sqrt{\frac{4^2 + 2(4)(x) + (x)^2}{x^2}}$

So, $A(x) = \sqrt{\frac{(4+x)^2}{x^2}}$ but $x < -4$.

So, $x + 4 < 0$

$4 + x < 0$

$= \frac{-(4+x)}{-x}$.

Thus $A(x) = \frac{4+x}{x}$ (b)

Ex-2. Part-A:

1a) $AB = \frac{4^8 - 8^6}{128^2 - 16^4}$

$= \frac{2^{16} - 2^{18}}{2^{14} - 2^{16}}$

$= \frac{2^{16}(1 - 2^2)}{2^{14}(1 - 2^2)}$

Then $AB = 2^2$ units of length.

$BC = \left(\frac{1}{2}\right)^2 - \frac{3}{2^2} + \frac{3^2}{2}$

$= \frac{1}{4} - \frac{3}{4} + \frac{9}{2}$

$= -\frac{2}{4} + \frac{9}{2}$.

Then, $BC = -\frac{1}{2} + \frac{9}{2} = 4$

Thus, $\boxed{BC = AB = 4}$ units of length

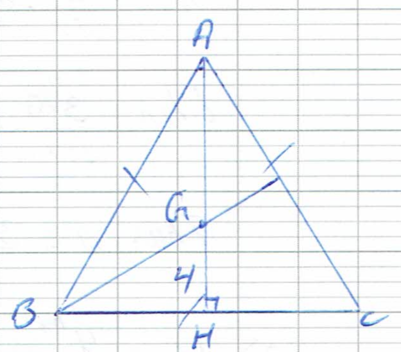
b) $AC = \left(\sqrt{7 - 2\sqrt{10}} \times \sqrt{7 + 2\sqrt{10}}\right)\left(\frac{\sqrt{8} \times 2\sqrt{27}}{3\sqrt{54}}\right)$

$= \sqrt{(7)^2 - (2\sqrt{10})^2}\left(\frac{2\sqrt{\cancel{8}^{4} \times \cancel{9} \times 3}}{3\sqrt{\cancel{9} \times \cancel{6}_{3}}}\right)$

$= \sqrt{49 - 40}\left(\frac{2}{3}\sqrt{\frac{4 \times \cancel{3}}{\cancel{3}}}\right)$

$= \sqrt{9}\left(\frac{4}{3}\right)$

Thus, $\boxed{AC = 4 = (2)^2}$



c) In $\triangle ABC$ we have:

$AB = AC = BC = 4$ units proved)

Thus, $\triangle ABC$ is equilateral.

2a) $[AH]$ is height relative to $[BC]$ (given)

So, $AH = \frac{\sqrt{3}}{2} \times$ side (height in an equi $\triangle$)

$= \frac{\sqrt{3}}{2} \times AB$

Thus, $\boxed{AH = \frac{4\sqrt{3}}{2} = 2\sqrt{3}}$ units of length.

G is centroid of $\triangle ABC$ (given)

And $[AH]$ is a median (

So, $GH = \frac{1}{3} AH = \frac{2\sqrt{3}}{3}$.