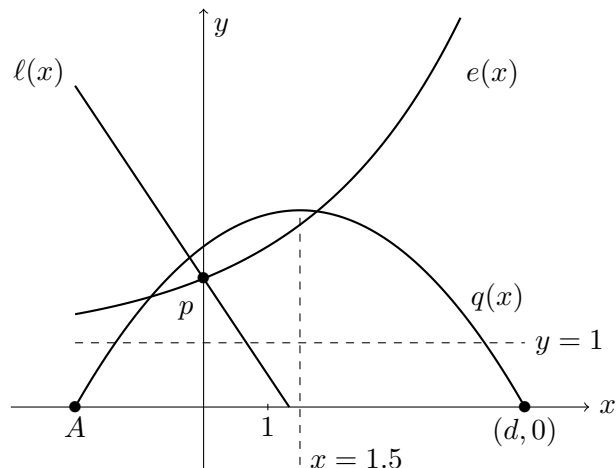


10. [10 points] The graph below shows the functions $\ell(x)$, $q(x)$ and $e(x)$. The letters k , p , d are unknown constants. You do not need to show your work for this problem.

- $\ell(x)$ is a linear function with formula $\ell(x) = -kx + p$.
- $\ell(x)$ has an x -intercept between 1 and 1.5.
- $e(x)$ is a transformation of an exponential function with growth factor k .
- $e(x)$ has a horizontal asymptote $y = 1$.
- $q(x)$ is a quadratic function with a zero at $(d, 0)$.
- The axis of symmetry of $q(x)$ is at $x = 1.5$.



a. [6 points] Circle **one** correct answer.

i. [2 points] A possible formula for $e(x)$ is:

- $pk^x + 1$ pk^x $p(1 + k)^x + 1$ $(p - 1)k^x + 1$ None of these

ii. [2 points] The x -intercept of the function $\ell(x)$ is:

- $\frac{p}{k}$ $\frac{k}{p}$ p 1 None of these

iii. [2 points] The point A is the other zero of $q(x)$. The coordinates of point A are:

- $(-d, 0)$ $(0, -d)$ $(d - 1.5, 0)$ $(3 - d, 0)$ None of these

b. [4 points] If $q(x) = ax^2 + bx + c$ for some constants a , b and c , rank the quantities $p, 0, k, 1, a$ in ascending order:

$$\underline{a} < \underline{0} < \underline{1} < \underline{k} < \underline{p}$$