7 The point O is the origin.
Two points P and Q are such that $\overrightarrow{PQ}$ is in the same direction as $-\mathbf{i}+5\mathbf{j}$.

(a) The point R is such that $\overrightarrow{OR}$ is in the same direction as $\overrightarrow{PQ}$ and the magnitude of $\overrightarrow{OR}$ is $3\sqrt{26}$.

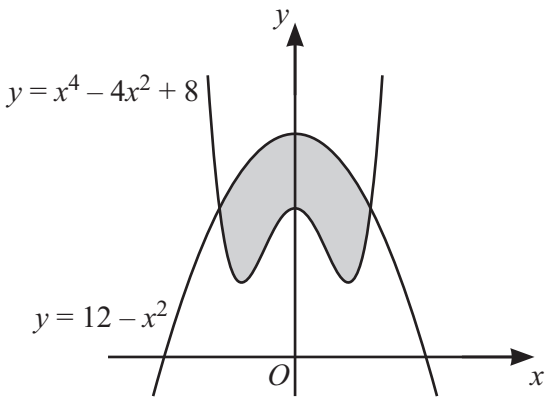
Find $\overrightarrow{OR}$. [3]

(b) $\overrightarrow{OP}$ is in the same direction as $2\mathbf{i}-3\mathbf{j}$ and $\overrightarrow{OQ}=10\mathbf{i}+6\mathbf{j}$.

Find $\overrightarrow{OP}$. [4]

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The diagram shows part of each of the curves $y = 12 - x^2$ and $y = x^4 - 4x^2 + 8$.

Find the area of the shaded region enclosed by the two curves. [7]

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