

<p><b>191</b> A function <math>f</math>, defined on a suitable domain, is given by <math>f(x) = \frac{6x}{x^2+6x-16}</math>. What restrictions are there on the domain of <math>f</math>?</p>	
<p><b>192</b> The diagram shows part of the graph of <math>y = f(x)</math>. Sketch the graph of <math>y = 2f(x) + 1</math></p>	
<p><b>193</b> <math>\mathbf{p} = -\mathbf{i} + 3\mathbf{j} + 4\mathbf{k}</math> and <math>\mathbf{q} = 7\mathbf{i} - \mathbf{j} + 5\mathbf{k}</math></p> <ol style="list-style-type: none"> <li>Express <math>\overrightarrow{PQ}</math> in component form.</li> <li>Find the length of <math>PQ</math>.</li> </ol>	
<p><b>194</b> The vectors <math>\mathbf{u} = \begin{pmatrix} 1 \\ k \\ k \end{pmatrix}</math> and <math>\mathbf{v} = \begin{pmatrix} -6 \\ 2 \\ 5 \end{pmatrix}</math> are perpendicular. What is the value of <math>k</math>?</p>	
<p><b>195</b> Show that: <math>(1 + 2\sin x)(1 - 2\sin x) = 4\cos^2 x - 3</math></p>	
<p><b>196</b> Find the equation of the line through the point <math>(-1, 4)</math> which is parallel to the line with equation <math>3x - y + 2 = 0</math>.</p>	
<p><b>197</b> A triangle has vertices <math>P(-2, 2)</math>, <math>Q(6, 6)</math> and <math>R(6, -4)</math>. Find the equation of the perpendicular bisector of <math>PR</math>.</p>	
<p><b>198</b> Find <math>P</math> and <math>Q</math>, the points of intersection of the line <math>y = 3x - 5</math> and the circle <math>C_1</math> with equation <math>x^2 + y^2 + 2x - 4y - 15 = 0</math>.</p>	
<p><b>199</b> A sequence is defined by the recurrence relation <math>u_{n+1} = \frac{1}{4}u_n + 16</math>, <math>u_0 = 0</math>. Calculate the values of <math>u_1</math>, <math>u_2</math>, and <math>u_3</math>.</p>	
<p><b>200</b> Calculate the shaded area between the curve <math>y = -x^2 + 7x - 10</math> and the <math>x</math>-axis.</p>	