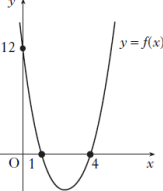
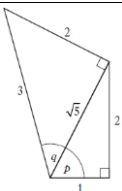
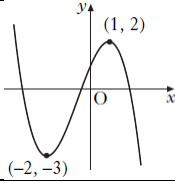
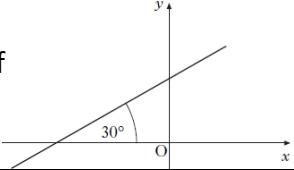


<p><b>41</b> The graph has an equation of the form <math>y = k(x - a)(x - b)</math>. What is the equation of the graph?</p>	
<p><b>42</b></p> <p>For what values of <math>x</math> is <math>6 + x - x^2 &lt; 0</math>?</p>	
<p><b>43</b></p> <p>Express <math>\log_a 25 + \log_a 4 - \log_a 20</math> as the logarithm of a single number.</p>	
<p><b>44</b></p> <p>Solve <math>\cos 2x - 3\cos x + 2 = 0</math> for <math>0 \leq x &lt; 360</math>.</p>	
<p><b>45</b> The diagram shows two right-angled triangles with sides and angles given. What is the value of <math>\sin(p + q)</math>?</p>	
<p><b>46</b></p> <p>What is the derivative of <math>(x^3 + 4)^2</math>?</p>	
<p><b>47</b> The point <math>P(5, 12)</math> lies on the curve with equation <math>y = x^2 - 4x + 7</math>. Find the equation of the tangent to the curve.</p>	
<p><b>48</b></p> <p>Find <math>\int 4 \sin(2x + 3) dx</math>.</p>	
<p><b>49</b></p> <p>Find <math>\int_{-2}^2 (x + 1)^2 dx</math>.</p>	
<p><b>50</b></p> <p>Write <math>2\sin x^\circ + 3\cos x^\circ</math> in the form <math>k\sin(x - a)</math>, for <math>k &gt; 0</math> and <math>0 \leq a \leq 360</math>.</p>	

<p><b>51</b> Functions <math>f</math> and <math>g</math> are defined on a suitable domain by <math>f(x) = \cos x</math> and <math>g(x) = x + \frac{\pi}{6}</math>. What is the value of <math>f\left(g\left(\frac{\pi}{6}\right)\right)</math>?</p>	
<p><b>52</b> The diagram shows the graph of <math>y = f(x)</math>. Sketch <math>y = f(x + 2) - 1</math></p>	
<p><b>53</b> Given that <math>\mathbf{u} = \begin{pmatrix} 2 \\ 0 \\ 1 \end{pmatrix}</math> and <math>\mathbf{v} = \begin{pmatrix} -1 \\ 2 \\ 4 \end{pmatrix}</math>, find <math>3\mathbf{u} - 2\mathbf{v}</math> in component form.</p>	
<p><b>54</b> The vectors <math>x\mathbf{i} + 5\mathbf{j} + 7\mathbf{k}</math> and <math>-3\mathbf{i} + 2\mathbf{j} - \mathbf{k}</math> are perpendicular. What is the value of <math>x</math>?</p>	
<p><b>55</b> Prove that <math>2\cos^2 A + 3\sin^2 A - 2 = \sin^2 A</math>.</p>	
<p><b>56</b> A line makes an angle of <math>30^\circ</math> with the positive direction of the <math>x</math>-axis as shown. What is the gradient of the line?</p>	
<p><b>57</b> Find the equation of the perpendicular bisector of the line joining <math>P(3, -3)</math> to <math>Q(-1, 9)</math>.</p>	
<p><b>58</b> Write down the centre and calculate the radius of the circle with equation <math>x^2 + y^2 + 8x + 4y - 38 = 0</math></p>	
<p><b>59</b> A sequence is defined by the recurrence relation <math>u_{n+1} = 2u_n + 3</math> and <math>u_0 = 1</math>. What is the value of <math>u_3</math>?</p>	
<p><b>60</b> Calculate the shaded area enclosed by the line <math>y = 2x - 3</math> and the curve <math>y = x^2 - 5x - 3</math>.</p>	