

<p>Let <math>f(x)</math> be a polynomial of degree 3 such that <math>f(k) = -\frac{2}{k}</math> for <math>k=2, 3, 4, 5</math>. Then the value of <math>52-10f(10)</math> is equal to _____ .</p> <p>[Based on JEE Main 2021]      [<a href="#">123IITJEE</a>]</p>	<p>We have, <math>kf(k)+2 = 0</math> for <math>k = 2, 3, 4, 5</math></p> <p>Let <math>g(k) = kf(k)+2</math> where <math>g(x)</math> is a polynomial of degree 4.</p> <p><math>g(x) = a(x-2)(x-3)(x-4)(x-5) = xf(x)+2</math></p> <p>To find <math>a</math>, let us put <math>x = 0</math>.</p> <p><math>g(0) = a(-2)(-3)(-4)(-5) = 0+2</math></p> <p>So, <math>a = \frac{1}{60}</math></p> <p>Now,</p> <p><math>xf(x) + 2 = \frac{1}{60}(x-2)(x-3)(x-4)(x-5)</math></p> <p><math>\therefore 10f(10) + 2 = \frac{1}{60} \times 8 \times 7 \times 6 \times 5 = 28</math></p> <p><math>\therefore 52 - 10f(10) = 26</math></p>
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