

کتابخانه

محل ازل

عبارت انتگرال با متغیر x و $\sqrt{x}$ (الف)

بهره دهی: $u = \sqrt{x}$ و $du = \frac{1}{2\sqrt{x}} dx$

پس $dx = 2u du$

پس $\int \sqrt{x} dx = \int u \cdot 2u du = 2 \int u^2 du$

(ب) $\int \sqrt{x+1} dx = \int u du = \frac{1}{2} u^2 + C$

$\int \sqrt{x} dx = \frac{2}{3} x^{3/2} + C$

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نتیجه بار و مشتق

$\int \sin^2 x dx = \frac{x}{2} - \frac{\sin 2x}{4} + C$

$$1) f(x) = (2\sqrt{x})/x \rightarrow 2/x \quad 5x/x = 5$$

$$g(x) = 1/x$$

پیدا کردن

$$\downarrow$$

$$1 - 5x/x$$

الف)

$$x/x = 1 \quad (x \neq 0)$$

$$x - x = 0 \Rightarrow 0/x = 0$$

$$f(x) = |1| = 1 \quad g(x) = |0| = 0$$

محل

پیدا نیست

$$2) f(x) = 1, \quad g(x) = 1, \quad [x]$$

مربع کامل است

و ثابت

$$3) f(x) = \sqrt{x-1} / f(x-1) \quad g(x) = \sqrt{x-1} / \sqrt{x-1}$$

مثال

مربع کامل است

$$i) f(x) = x - \sqrt{x/a} g(x) = x - \sqrt{x/a}$$

مطلوبه

مسئله

$$f(x) = \frac{x-b}{x-a}$$

$$g(x) = \frac{x-a}{x-b}$$

$$am - a \times \frac{x-b}{x-a} = \frac{a(x-b)}{x-a}$$

$$bn = b \cdot \frac{x-a}{x-b} = \frac{b(x-a)}{x-b}$$

$$am - bn = \frac{a(x-b)}{x-a} - \frac{b(x-a)}{x-b}$$

$$a = 2$$

$$b^2 = 1$$

$$n = 2$$

$$m = 2 - \frac{1}{2-2} = \frac{2}{1} = 2 \Rightarrow am = 2 \times 2 = 4$$

$$n = \frac{3-2}{3-1} = \frac{1}{2} \Rightarrow bn = 1 \times \frac{1}{2} = \frac{1}{2}$$

$$am - bn = 4 - \frac{1}{2} = \frac{7}{2}$$

$$f(x) - g(x) = 0$$

مسئله ۲۸

$$f(x) = g(x) \text{ اگر } f \text{ و } g \text{ یکسان باشند}$$

$$\sqrt{x+1} \rightarrow x+1 \text{ , } \rightarrow x \text{ , } -1$$

$$f(x) - g(x) + f(x) - x + 1 = 0 \Rightarrow f(x) = x - \sqrt{x+1}$$

$$f(x) = x - \sqrt{x+1} \text{ : } x \geq -1$$

$x \geq -1$ است

سؤال

$$f(x) = \sqrt{x} - x^2 \quad f(x) : x \in [0, +\infty)$$

$$x \geq 0$$

$$g(x) = \sqrt{x} - (\sqrt{x} - x^2) = \sqrt{x} - \sqrt{x} + x^2 = x^2$$

$$D = g(x) = x \in [0, +\infty)$$

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الحمد لله

$$f(x) = \frac{bx + c}{ax + b}$$

$$ax + b = 0 \Rightarrow x = -b/a$$

$$Dg = R - \left\{ -\frac{b}{a} \right\}$$

$$-\frac{b}{a} = a$$

$$-b = a^2 \Rightarrow ab = -a^2$$

$$\frac{ab}{c} \text{ كذا } \frac{a^2}{c}$$

$$a \neq 0$$

$$\frac{ab}{c} = -\frac{a^2}{c}$$

بما أن $a \neq 0$ فإن $b = -a$

$$h(x) = \frac{f(x)}{f(x) + g(x)}$$

سوال ۱

$$f = \{(x, -1), (x, 1), (-x, 1), (0, 0)\}$$

$$x = 2$$

$$f(x) = -1, g(x) = 1$$

$$h(x) = \frac{2 \times 1}{-1 + 1} = \frac{1}{0}$$

$$x = 1 \quad f(x) \text{ تعریف نشده}$$

$$x = -1 \quad f(-1) = 1, g(-1) = -1$$

$$x = 0 \quad f(0) = 0, g(0) = 0$$

$$x = \frac{1}{x}$$

PARAMOUNT

سوال نمبر

$$f(x) = \sqrt{-x^2 - x + m}$$

$$g(x) = \{(a, b)\}$$

$$-x^2 - x - m \Big|_0 \rightarrow -(x^2 - x + m) \Big|_0$$

$$f = g$$

$$-x^2 - x - m = 0$$

$$b = 0 \in \mathbb{C}_x$$

$$a^2 - a + m = 0$$

$$a + b \in \mathbb{C}_x \quad b = 0 \Rightarrow a + b = 0$$

$$a^2 - a + m = 0 \quad a^2 - a + m = 0, a + b = a$$

سوال رقم

$$f(x) = \frac{ax + r}{x^2 + x + b}$$

$$g(x) = \frac{r}{x - c}$$

$$\frac{ax + r}{x^2 + x + b} = \frac{r}{x - c}$$

$$(ax + r)(x - c) = r(x^2 + x + b)$$

$$ax - acx + rx - rc = rx^2 + rx + rb$$

$$a = r \quad \text{بجای}$$

$$a = r \quad \text{بجای} \quad -ac + r = r \quad \text{بجای} \quad x$$

$$-rc + r = r \rightarrow -rc = 0 \rightarrow c = 0$$

$$-rc = rb \rightarrow 0 = rb \rightarrow b = 0 \quad \text{بجای}$$

$$a = r \quad b = 0 \quad c = 0$$

$$a + b + c = r + 0 + 0 = r$$