doubtnut
India's Number 1 Education App

PHYSICS

BOOKS - DC PANDEY ENGLISH

BASIC MATHEMATICS

Example

1. Differentiate the following functions with respect to x

(a) $x^3 + 5x^2 - 2$

(b) $x \sin x$

(c) $(2x + 3)^6$

(d) $\dfrac{x}{\sin x}$

(e) $e^{(5x+2)}$

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2. Integrate the following functions with respect to x

(a) $\int (5x^2 + 3x - 2)\,dx$

(b) $\int \left(4 \sin x - \dfrac{2}{x}\right) dx$

(c) $\int \frac{dx}{4x+5}$

(d) $\int (6x+2)^3 dx$

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3. Draw straight lines corresponding to following equations

(a) $y = 2x$

(b) $y = -6x$

(c) $y = 4x + 2$

(d) $y = 6x - 4$

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4. Find maximum or minimum values of the functions

(a) $y = 25x^2 + 5 - 10x$

(b) $y = 9 - (x - 3)^2$

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Exercise

1. Find the value of

(a) $\cos 120^\circ$

(b) $\sin 240^\circ$

(c) $\tan(-60^\circ)$

(d) $\cot 300^\circ$

(e) $\tan 330^\circ$

(f) $\cos(-60)^\circ$

(g) $\sin(-150)^\circ$

(h) $\cos(-120)^\circ$

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2. Find the value of 2 sin 45 ∘ cos 15

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3. Differentiate the following functions with respect to x

(a) $x^4 + 3x^2 - 2x$ (b) $x^2 \cos x$

(c) $(6x + 7)^4$ (d) $e^x x^5$

(e) $\dfrac{(1 + x)}{e^x}$

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4. Integrate the following functions with respect to t

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5. Integrate the following function

(a) $\int_o^2 2tdt$ (b) $\int_{\pi/6}^{\pi/3} \sin x dx$

(c) $\int_4^{10} \frac{dx}{x}$ (d) $\int_o^{\pi} \cos x dx$

(e) $\int_1^2 (2t-4)dt$

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6. Find maximum/maximum value of y in the functions given below

(a) $y = 5 - (x-1)^2$ (b) $y = 4x^2 - 4x + 7$

(c) $y = x^3 - 3x$

$y = x^3 - 6x^2 + 9x + 15$

(e) $y = (\sin 2x - x)$, where $-\frac{\pi}{2} \leq \times \leq \frac{\pi}{2}$

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7. Draw the graphs corresponding to the equations

(a) $y = 4x$ (b)$y = -6x$

(c) $y = x + 4$ (d) $y = -2x + 4$

(e) $y = 2x - 4$ (f) $y = -4x - 6$

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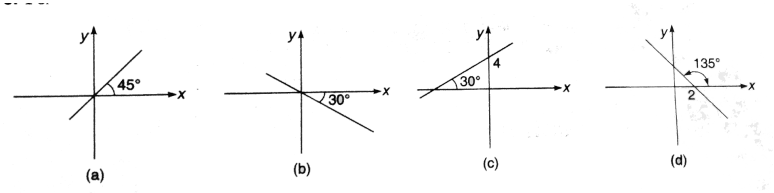
8. For the graphs given below, write down their $x - y$ equations



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9. For the equations given below, tell the nature of graphs.

(a) $y = 2x^2$ (b) $y = -4x^2 + 6$

(c) $y = 6^{-4x}$ (d) $y = 4\left(1 - e^{-2x}\right)$

(e) $y = \frac{4}{x}$ (f) $y = -\frac{2}{x}$

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10. Value of y decreases exponentially from $y = 10$ to $y = 6$. plot $ax - y$ graph.

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11. Value of y increases exponentially from $y = -4$ to $y = +4$. Plot $ax - y$ graph.

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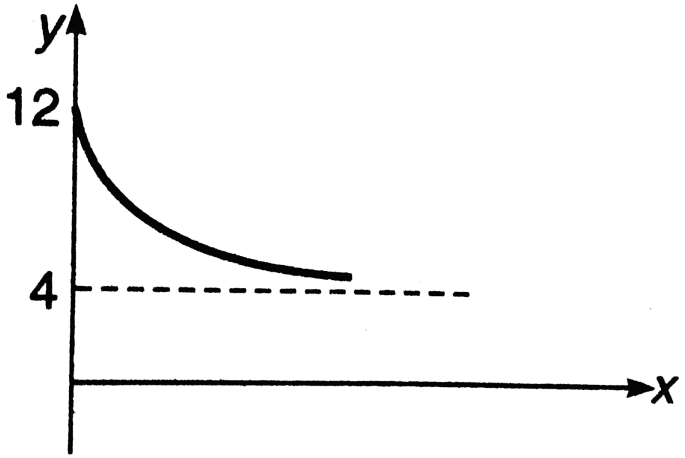
12. The graph shown in figure is exponential. Write down the equation corresponding to the graph.



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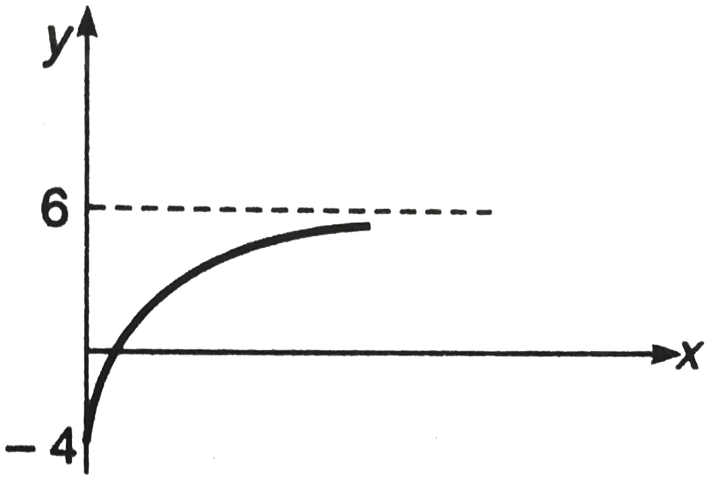
13. The graph shown in figure is exponential. Write down the equation corresponding to the graph.



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