





29. Suppose  $\overrightarrow{PA}$  and  $\overrightarrow{PB}$  are tangent to a circle at A and B, respectively, and intersect at P as shown. If  $m \angle BPA = \alpha$ , which of the following is NOT true?

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Institute # # '& BOK multilite 新林塔梯 myinne ## # # matine # # 13 PR mutute ## # B A.  $\gamma - \frac{1}{2}\alpha = 90^{\circ}$  B.  $\delta + \gamma = 180^{\circ}$  C.  $\alpha + 2\delta = 180^{\circ}$  D.  $\delta = \gamma - 2\alpha$  E.  $\gamma > \delta$ 30. If  $f_0(x) = \frac{x}{x+1}$  and  $f_{n+1} = f_n o f_n$  for  $n = 0, 1, 2, \cdots$ , find a formula for  $f_n(x)$ . Y. A.  $\frac{x}{(n+1)^2x+1}$  B.  $\frac{x}{(n+1)x+1}$  C.  $\frac{(n+1)x}{(n+1)x+1}$  D.  $\frac{x}{(n-1)^2x+1}$ E. None of these 31. Find the solution set of the inequality |x - 3| + |x + 2| < 11. Ro A.  $(-4, -2) \cup (3,5)$  B. (-4,6) C. (-3,8) D. (-2,3) E. None of these 32. If two distinct positive divisors of 64 are randomly selected, what is the probability that their sum is less than 32? B. <u>15</u> C.  $\frac{10}{21}$  D.  $\frac{1}{2}$  E.  $\frac{5}{7}$ A. Y. 33. Suppose you are asked to randomly pick exactly one letter from each of the following two sets of letters. Set  $\#1 = \{A, B, C, D, E\}$  and set  $\#2 = \{K, L, M, N, O, P\}$ . What is the probability of picking A or O? C.  $\frac{1}{6}$ D.  $\frac{1}{15}$ E.  $\frac{1}{30}$ Β. А. Y. 34. Five children A, B, C, D and E sit randomly in five chairs in a row. What is the probability that A and B do not sit next to each other that A and B do not sit next to each other. A.  $\frac{2}{r}$ B.  $\frac{3}{r}$ C.  $\frac{1}{2}$ D.  $\frac{1}{20}$ E. None of these 35. Let  $A = \begin{bmatrix} \cos x & -\sin x \\ \sin x & \cos x \end{bmatrix}$ . Compute  $S = \sum_{k=1}^{100} kdet(A^k)$ . A. 5050 B. 10100 C. 50500 D. 1010 E. None of these 36. Consider the matrices  $I_2 = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$  and  $A = \begin{bmatrix} 10 & 20 \\ 30 & -10 \end{bmatrix}$ . Calculate  $A^{200}$ . A.  $700^{101}I_2$  B.  $700^{100}I_2$  C.  $700^{100}A$  D.  $700^{101}A$  E. None of these , 001 Intitute the the " the " multine m # '3 PC 而此此此称林塔保 mittille mat 13 Y.

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