

Bellwork Alg 2B Thursday, December 14, 2017

Find the next three terms in each sequence.

1. $8, 40, 4, 60, 3, \dots$

2. $-1, \frac{2}{3}, \frac{7}{3}, 4, \frac{17}{3}, \dots$

3. $-6, -2, 0, 1, \frac{3}{2}, \dots$

4. $1, \frac{3}{2}, \frac{11}{6}, \frac{25}{12}, \dots$

5. What digit appears in the units place in the number obtained when 2^{320} is multiplied out?
A. 0 B. 2 C. 4 D. 6 E. 8

Find the next three terms in each sequence.

1. $8, 40, 4, 60, 3, \dots$
 $\downarrow \quad \downarrow \quad \downarrow$
 $\times 5 \quad \div 10 \quad \times 15$

alternate mult & $\div$
 by next multiple of 5

Next 3:

$75, 2.5, 87.5$

2. $-1, \frac{2}{3}, \frac{7}{3}, 4, \frac{17}{3}, \dots$

add $\frac{5}{3}$:

Next 3:

$\frac{22}{3}, 9, \frac{32}{3}$

$\uparrow$
 $\frac{27}{3}$

3. $-6, -2, 0, 1, \frac{3}{2}, \dots$
 $\downarrow \quad \downarrow \quad \downarrow$
 $+4 \quad +2 \quad +\frac{1}{2}$

add half of previous
 amount added

$+\frac{1}{4} \quad +\frac{1}{8} \quad +\frac{1}{16}$

Next 3: $\frac{7}{4}, \frac{15}{8}, \frac{31}{16}$

$\frac{3}{2} + \frac{1}{4} = \frac{6}{4} + \frac{1}{4} = \frac{7}{4}$
 $\frac{7}{4} + \frac{1}{8} = \frac{14}{8} + \frac{1}{8} = \frac{15}{8}$
 $\frac{15}{8} + \frac{1}{16} = \frac{30}{16} + \frac{1}{16} = \frac{31}{16}$

4. $1, \frac{3}{2}, \frac{11}{6}, \frac{25}{12}, \dots$
 $\downarrow \quad \downarrow \quad \downarrow$
 $+\frac{1}{2} \quad +\frac{1}{3} \quad +\frac{1}{4}$

add fraction whose denominator
 is next integer & numerator
 is 1.

Next 3: $\frac{137}{60}, \frac{147}{60}, \frac{1089}{420}$

$\frac{25}{12} + \frac{1}{5} = \frac{125}{60} + \frac{12}{60} = \frac{137}{60}$
 $\frac{137}{60} + \frac{1}{6} = \frac{137}{60} + \frac{10}{60} = \frac{147}{60}$
 $\frac{147}{60} + \frac{1}{7} = \frac{1029}{420} + \frac{60}{420} = \frac{1089}{420}$

5. What digit appears in the units place in the number obtained when 2^{320} is multiplied out?

- A. 0 B. 2 C. 4 D. 6 E. 8

$2^1 = 2$
 $2^2 = 4$
 $2^3 = 8$
 $2^4 = 16$
 $2^5 = 32$
 $2^6 = 64$
 $2^7 = 128$
 $2^8 = 256$
 $2^9 = 512$

units place
 digit
 repeats
 every 4

divide the exponent
 by 4. the remainder
 specifies
 where you
 are in
 the pattern
 of 4

$4 \overline{) 320} = 80$

2^{320} has just
 completed the
 80th pattern of 4
 units digit is
 a 6