

Name:

# 5-a-day ACT prep #15

Solve each problem, show your work, and then choose the correct answer.

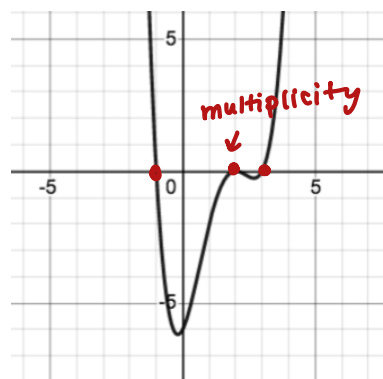
Do not linger over problems that take too much time. Solve as many as you can; then return to the others in the time you have left for this test.

You are permitted to use a calculator on this test. You may use your calculator for any problems you choose, but some of the problems may best be done without using a calculator.

Note: Unless otherwise stated, all of the following should be assumed.

1. Illustrative figures are NOT necessarily drawn to scale.
2. Geometric figures lie in a plane.
3. The word *line* indicates a straight line.
4. The word *average* indicates arithmetic mean.

1. The graph of the polynomial functions shown below is tangent to the x-axis at the point (2, 0). What must be true about the degree of the function?



- A. The degree  $< 3$
- B. The degree  $\leq 3$
- C. The degree  $> 4$
- ☒ D. The degree  $\geq 4$
- E. None of these

2. Which of the following expressions is equivalent to  $\frac{5x^2-3x-2}{4x^2+4x-3} \div \frac{5x^2-13x-6}{2x^2+13x+15}$ ?

- F.  $\frac{35}{33}$
- G.  $\frac{(5x^2-3x-2)(5x^2+6)}{(4x^2+4x-3)(2x^2+15)}$
- H.  $\frac{x+5}{2(x-3)}$
- ☒ I.  $\frac{x^2+4x-5}{2x^2-7x+3}$
- J. None of these

3. What is the sum of the two solutions to the equation  $4x^2 - 9 = 5x$ ?

- A. 0
- ☒ B.  $\frac{5}{4}$
- C. 3
- D.  $\frac{7}{2}$
- E. None of these

4. Which of the following is equivalent to  $2x\sqrt{20} + 3\sqrt{45x^2} + x\sqrt{180}$ ?

- ☒ A.  $19x\sqrt{5}$
- B.  $6x\sqrt{245}$
- C.  $3x\sqrt{200} + 3\sqrt{45x^2}$
- D.  $3 + 3x\sqrt{200} + 45x^2$
- E. None of these

5. Which of the following expressions is equivalent to  $\left(\frac{1}{4}\right)^{2x} = 32^{4x-2}$ ?

- A. -2
- ☒ B.  $\frac{5}{12}$
- C.  $\frac{11}{12}$
- D. 7
- E. None of these

$$\begin{aligned}\sqrt{20} &= 2\sqrt{5} \\ \sqrt{45} &= 3\sqrt{5} \\ \sqrt{180} &= 6\sqrt{5} \\ 2x(2\sqrt{5}) + 3x(3\sqrt{5}) + x(6\sqrt{5}) \\ &= 4x\sqrt{5} + 9x\sqrt{5} + 6x\sqrt{5} \\ &= 19x\sqrt{5}\end{aligned}$$

$$\begin{aligned}-24x &= -10 \\ -24 &-24 \\ x &= \frac{10}{24} = \frac{5}{12}\end{aligned}$$