Name _____ Block _____

# PreCalculus HONORS Prerequisites – Summer Practice A

1) Fractions – Learn to love 'em: $\frac{1}{2x}+\frac{1}{3x}+\frac{1}{4x}=$

A) $\frac{13}{12x}$ B) $\frac{1}{24x}$ C) $\frac{7}{2x}$ D) $\frac{1}{9x}$ E) $\frac{19}{18x}$ F) $\frac{11}{6x}$

---

2) Reduce completely: $\frac{2x^2-50}{x^2-10x+25}$

A) $\frac{2(x-5)^2}{(x+5)^2}$ B) $-\frac{x^2-2}{10x}$ C) $\frac{2(x-5)}{x+5}$

D) $\frac{2(x+5)}{x-5}$ E) $\frac{x^2-25}{(x-5)^2}$ F) $\frac{x^2+10x-2}{x}$

---

3) If $x^2-5x-24=0$ for real number $x$, then $x$ =

A) $3,-8$ B) $-3,8$ C) $2,-12$ D) $-2,12$ E) $-4,6$ F) $4,-6$

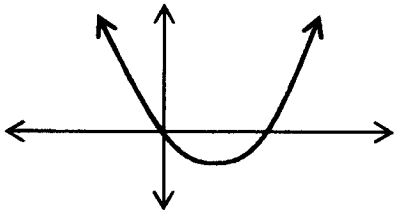
---

4) Evaluate: $8^{5/3}$

A) 24 B) 24/5 C) 10 D) 40/3 E) 32 F) platypus

---

5) Which equation yields a graph that looks like this?:



A) $y=x^2-4$ B) $y=-x^2-4$

C) $y=x^2-4x$ D) $y=-x^2-4x$

E) $y=x^2-4x+4$ F) $y=-x^2-4x+4$

---

6) Solve: $x^2-5x-2=0$

A) $\frac{-5\pm\sqrt{21}}{2}$ B) $\frac{-5\pm\sqrt{33}}{2}$ C) $\frac{-5\pm\sqrt{17}}{2}$

D) $\frac{5\pm\sqrt{21}}{2}$ E) $\frac{5\pm\sqrt{33}}{2}$ F) $\frac{5\pm\sqrt{17}}{2}$

---

7) Evaluate: $\log_3 81$

A) 3 B) 4 C) 8 D) 9 E) 27 F) log cabin

8) Multiply: $(7-\sqrt{2})(8+\sqrt{2})$.

A) $52+2\sqrt{2}$ B) $58-2\sqrt{2}$ C) $54+56\sqrt{2}$

D) $52-\sqrt{2}$ E) $58+56\sqrt{2}$ F) $54-\sqrt{2}$

---

9) If $\log_{10}2\approx 0.30$ and $\log_{10}3\approx 0.48$, evaluate: $\log_{10}48$

A) 0.78 B) 1.26 C) 1.38 D) 1.68 E) 1.92 F) 4.8

---

10) Divide, using either polynomial long division or synthetic division:

$x+2\overline{)2x^4+7x^3+8x^2+8x+8}$

A) $2x^3+1x^2+3x+2$ B) $2x^3+1x^2+3x+8$ C) $2x^3+1x^2+3x+4$

D) $2x^3+3x^2+2x+2$ E) $2x^3+3x^2+2x+8$ F) $2x^3+3x^2+2x+4$

---

11) Simplify $\sqrt[3]{128a^{13}b^6}$. Assume that all variables are positive.

A) $2a^4b^2\cdot\sqrt[3]{4a}$ B) $4a^4b\cdot\sqrt[3]{a}$ C) $8a^3b\cdot\sqrt[3]{2a}$

D) $2a^4b\cdot\sqrt[3]{8a}$ E) $4a^4b^2\cdot\sqrt[3]{2a}$ F) $8a^2b^2\cdot\sqrt[3]{4a}$

---

12) Evaluate: $\log_{\sqrt[3]{2}}4$

A) 3 B) 4 C) 6 D) $\int e^{i\pi x}dx$ E) 8 F) 12

---

13) Solve: $6x^2+19x-20=0$

A) $x=-\frac{5}{6},4$ B) $x=-\frac{10}{3},1$ C) $x=-\frac{5}{3},2$

D) $x=-4,\frac{5}{6}$ E) $x=-1,\frac{10}{3}$ F) $x=-2,\frac{5}{3}$

---

14) Completely expand the logarithm: $\log_3\frac{9x^2}{y^3}$

A) $2+2\log_3 x-3\log_3 y$ B) $\log_3 9x^2-\log_3 y^3$ C) $3+2\log_3 x-\log_3 y$

D) $\log_3 9+\frac{2}{3}\log_3 xy$ E) $6\log_3 x+3\log_3 y$ F) $log_3\frac{9x^2}{y^3}$

---

15) Write in standard form an equation of the line passing through the point $(2,-5)$ with a slope of 1.

A) $x-y=7$ B) $x+y=-7$ C) $7x+y=0$

D) $x-y=-7$ E) $x+y=7$ F) $x+7y=0$

16) Solve for x: $6(x-0.8)-0.2(5x-4)=3$

A) $-0.71$ B) 0.71 C) $-0.9$ D) 0.9 E) $-1.4$ F) 1.4

---

17) A rectangle is 5 times as long as it is wide. The perimeter is 10.8 cm. Find the dimensions of the rectangle.

A) 0.7 cm by 3.5 cm B) 0.9 cm by 4.5 cm C) 1.1 cm by 5.5 cm

D) 0.8 cm by 4.6 cm E) 1.0 cm by 4.4 cm F) 1.2 cm by 4.2 cm

---

18) Simplify by combining like terms: $\frac{3a}{4}+\frac{b}{5}-\frac{2a}{3}+\frac{b}{7}$

A) $\frac{a}{7}+\frac{b}{12}$ B) $\frac{a}{12}+\frac{b}{7}$ C) $\frac{a}{12}+\frac{12b}{35}$

D) $\frac{5a}{12}+\frac{b}{6}$ E) $\frac{a}{7}+\frac{b}{6}$ F) $\frac{a}{6}+\frac{b}{7}$

---

19) Evaluate the expression $\frac{2(2h-5)}{-2+h}$ for the value $h=-4$

A) $\frac{13}{3}$ B) 3 C) $\frac{7}{2}$ D) 13 E) $\frac{8}{5}$ F) 6

---

20) Write as a single logarithm: $6\log_b t+2\log_b x$.

A) $8\log_b(t+x)$ B) $\log_b(t^6+x^2)$ C) $\log_b(t^6x^2)$

D) $\log_b(tx)^8$ E) $12\log_b(tx)$ F) $\log_b(tx^{12})$

---

21) A 4-mile cab ride costs \$7.50. A 10-mile cab ride costs \$15.90. Find a linear equation that models cost *c* as a function of distance *d*.

A) $c=1.40d+1.90$ B) $c=1.88d+8.40$ C) $c=1.59d+1.90$

D) $d=1.40c+1.90$ E) $d=1.88c+8.40$ F) $d=1.59c+1.90$

---

22) Find an equation for the line through $(5,-3)$ and perpendicular to $y=2x+4$.

A) $y=\frac{1}{2}x-\frac{11}{2}$ B) $y=-2x+7$ C) $y=-\frac{1}{2}x-\frac{1}{2}$

D) $y=\frac{1}{2}x+7$ E) $y=-2x-\frac{1}{2}$ F) $y=-\frac{1}{2}x-\frac{11}{2}$

---

23) Find the slope of the line: $-3x+5y=12$

A) $\frac{5}{3}$ B) $\frac{3}{5}$ C) 15 D) $-\frac{5}{3}$ E) $-\frac{3}{5}$ F) $-15$

---

24) Find the missing value to "complete the square" (and make the expression a perfect square trinomial): $x^2+6x+\_\_\_$

A) $\frac{3}{2}$ B) $\frac{9}{4}$ C) 6 D) 9 E) 36 F) 81

---

25) Multiply: $(-5-\sqrt{3})^2$.

A) $28-10\sqrt{3}$ B) $-13+5\sqrt{3}$ C) $25-10\sqrt{3}$

D) $28+10\sqrt{3}$ E) $-13-5\sqrt{3}$ F) $25+10\sqrt{3}$

---

26) Multiply and simplify, assuming all variables are positive: $\sqrt[3]{7x^7}\cdot\sqrt[3]{6x^8}$.

A) $\sqrt[3]{42x^{15}}$ B) $x^5\cdot\sqrt[3]{42}$ C) $x^5\cdot\sqrt[3]{42x^{15}}$

D) $2\cdot\sqrt[3]{7x^{15}}$ E) $2x^5\cdot\sqrt[3]{7}$ F) $2x^5\cdot\sqrt[3]{7x^{15}}$

---

27) Use the properties of logarithms to evaluate $\log_3 9x+\log_3 36x-2\log_3 2x$.

A) 2 B) 4 C) 8 D) 9 E) 12 F) 18

---

28) Solve for x: $\sqrt{x+7}+8=10$.

A) $-3$ B) $-5$ C) 3 D) 4 E) 11 F) 0

---

29) If $\log_{11} 3x=57$, then:

A) $11^{57}=3x$ B) $57^{11}=3x$ C) $(3x)^{11}=57$

D) $11^{3x}=57$ E) $57^{3x}=11$ F) $(3x)^{57}=11$

---

30) If $\log_b 2\approx 0.43$ and $\log_b 3\approx 0.68$, then $\log_b(27/4)\approx$

A) 0.78 B) 0.96 C) 1.18 D) 1.93 E) 2.04 F) 2.90

---

31) Combine to a single rational expression: $\frac{x-5}{x+3}-\frac{x+2}{x+7}$

A) $\frac{-3x-41}{x^2+10x+21}$ B) $\frac{-2x-31}{x^2+10x+21}$ C) $\frac{-x-21}{x^2+10x+21}$

D) $\frac{3x-41}{x^2+10x+21}$ E) $\frac{2x-31}{x^2+10x+21}$ F) $\frac{x-21}{x^2+10x+21}$

---

32) Write in exponential form with a prime base: $\frac{(8^3 4^5)^2}{32^5}$

A) $2^9$ B) $2^{11}$ C) $2^{13}$ D) $2^{15}$ E) $2^{17}$ F) $2^{19}$

---

33) The following equation has two real solutions: $x+4=\sqrt{13x+30}$.

Find both solutions to the equation and add them. The resulting sum is:

A) 10 B) 9 C) 8 D) 7 E) 6 F) 5

---

34) Reduce the rational expression: $\dfrac{2x^2-7x-15}{4x^2+10x+6}$

A) $\dfrac{x+3}{2x+2}$ B) $\dfrac{x-5}{2x+2}$ C) $\dfrac{x-3}{2x+6}$ D) $\dfrac{x+5}{2x+6}$ E) $\dfrac{x+3}{2x+1}$ F) $\dfrac{x+5}{2x+1}$

---

35) The x-coordinate of the vertex of parabola $y=3x^2+18x+3$ is

A) $x=-3$ B) $x=-2$ C) $x=-1$ D) $x=1$ E) $x=2$ F) $x=3$

---

36) The following equation has two real solutions: $\dfrac{x+4}{x-2}=2x-7$.

Find both solutions to the equation and add them. The resulting sum is:

A) 4 B) 5 C) 6 D) 7 E) 8 F) 9

---

37) Ummm... $(3/4)^{-2}=$

A) $\sqrt{\dfrac{3}{4}}$ B) $\sqrt{\dfrac{4}{3}}$ C) $\sqrt{\dfrac{16}{9}}$ D) $\dfrac{3}{4}$ E) $\dfrac{4}{3}$ F) $\dfrac{16}{9}$

---

38) Solve dat thang foolio: $3(2x-7)^2-2=25$

A) $x=-3,4$ B) $x=4,-1$ C) $x=-1,2$ D) $x=2,5$ E) $x=5,7$ F) $x=7,-3$

---

39) The following represent some of the most common algebra mistakes know to humankind. Select the **one** equation that is always **true** for all real, positive values of the variables:

A) $(x+y)^2=x^2+y^2$ B) $\dfrac{1}{a+b}=\dfrac{1}{a}+\dfrac{1}{b}$ C) $\sqrt{m-n}=\sqrt{m}-\sqrt{n}$

D) $(x^a)^b=x^{a+b}$ E) $\log_b R+\log_b S=\log_b RS$ F) $\dfrac{x+a}{y+a}=\dfrac{x}{y}$

(Hey, wanna break your poor math teacher's heart? Just use one of those false equations on a test.)

---

40) Who designed King Arthur's Round Table?

A) $\sum_{k=1}^{\infty} 2k^3-k$ B) $\dfrac{d}{dx}3x^5$ C) $\sqrt{2+\sqrt{2+\sqrt{2+\ldots}}}$

D) Sir Cumference E) $\lim_{x\to 0} 3x^{-1}$ F) $\sin(3x-\pi)$

---