Question ID 584e6e70

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Advanced Math	Equivalent expressions	Hard

ID: 584e6e70

One of the factors of $2x^3 + 42x^2 + 208x$ is $x + b$, where b is a positive constant. What is the smallest possible value of b?

Question ID cd96ea0e

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Advanced Math	Equivalent expressions	Hard

ID: cd96ea0e

Which expression is equivalent to $(7x^3 + 7x) - (6x^3 - 3x)$?

A. $x^3 + 10x$

B. $-13x^3 + 10x$

C. $-13x^3 + 4x$

D. $x^3 + 4x$

Question ID 0096685d

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Advanced Math	Equivalent expressions	Hard

ID: 0096685d

The expression $4x^2 + bx - 45$, where b is a constant, can be rewritten as $(hx + k)(x + j)$, where h, k, and j are integer constants. Which of the following must be an integer?

A. $\frac{b}{h}$

B. $\frac{b}{k}$

C. $\frac{45}{h}$

D. $\frac{45}{k}$

Question ID 6b8e2f7a

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Advanced Math	Equivalent expressions	Hard

ID: 6b8e2f7a

Which of the following expressions is(are) a factor of $3x^2 + 20x - 63$?

I. $x - 9$

II. $3x - 7$

A. I only

B. II only

C. I and II

D. Neither I nor II

Question ID ca2d5b7b

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Advanced Math	Equivalent expressions	Hard

ID: ca2d5b7b

If $4^{8c} = \sqrt[3]{4^7}$, what is the value of c?

Question ID 432bfc95

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Advanced Math	Equivalent expressions	Hard

ID: 432bfc95

Which expression is equivalent to $\frac{h^{15}q^7}{h^5q^{21}}$, where $h > 0$ and $q > 0$?

A. $\frac{h^{10}}{q^{14}}$

B. $\frac{h^3}{q^3}$

C. $h^{10}q^{14}$

D. h^3q^3

Question ID 5c88849a

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Advanced Math	Equivalent expressions	Hard

ID: 5c88849a

$$g(x) = \frac{3}{5}x + \frac{7}{6}$$
$$h(x) = 6x - 5$$

The functions g and h are defined by the equations shown. Which expression is equivalent to $g(x) \cdot h(x)$?

A. $\frac{18x^2}{5} - \frac{35}{6}$

B. $\frac{18x^2}{5} + \frac{27x}{11} - \frac{35}{6}$

C. $\frac{18x^2}{5} - 4x - \frac{35}{6}$

D. $\frac{18x^2}{5} + 4x - \frac{35}{6}$

Question ID 1bfc4f51

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Advanced Math	Equivalent expressions	Hard

ID: 1bfc4f51

Which expression is equivalent to $6x^8y^2 + 12x^2y^2$?

A. $6x^2y^2(2x^6)$

B. $6x^2y^2(x^4)$

C. $6x^2y^2(x^6 + 2)$

D. $6x^2y^2(x^4 + 2)$

Question ID d31ac27a

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Advanced Math	Equivalent expressions	Hard

ID: d31ac27a

$$0.36x^2 + 0.63x + 1.17$$

The given expression can be rewritten as $a(4x^2 + 7x + 13)$, where a is a constant. What is the value of a?

Question ID 75a3b0d6

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Advanced Math	Equivalent expressions	Hard

ID: 75a3b0d6

Which expression is equivalent to $(x^2+11)^2+(x-5)(x+5)$?

A. x^4+23x^2-14

B. x^4+23x^2+96

C. x^4+12x^2+121

D. x^4+x^2+146

Question ID a36c8654

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Advanced Math	Equivalent expressions	Hard

ID: a36c8654

Which expression represents the product of $\left(x^{-6}y^3z^5\right)$ and $\left(x^4z^5+y^8z^{-7}\right)$?

A. $x^{-2}z^{10}+y^{11}z^{-2}$

B. $x^{-2}z^{10}+x^{-6}z^{-2}$

C. $x^{-2}y^3z^{10}+y^8z^{-7}$

D. $x^{-2}y^3z^{10}+x^{-6}y^{11}z^{-2}$

Question ID 716b77c8

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Advanced Math	Equivalent expressions	Hard

ID: 716b77c8

The expression $(3x - 23)(19x + 6)$ is equivalent to the expression $ax^2 + bx + c$, where a, b, and c are constants. What is the value of b?

Question ID c5d23b51

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Advanced Math	Equivalent expressions	Hard

ID: c5d23b51

Which expression is equivalent to $(8x^3 + 8) - (x^3 - 2)$?

A. $8x^3 + 6$

B. $7x^3 + 10$

C. $8x^3 + 10$

D. $7x^3 + 6$

Question ID aefd363a

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Advanced Math	Equivalent expressions	Hard

ID: aefd363a

$$f(x) = x^2 + bx$$
$$g(x) = 9x^2 - 27x$$

Functions f and g are given, and in function f, b is a constant. If $f(x) \cdot g(x) = 9x^4 - 26x^3 - 3x^2$, what is the value of b?

A. -26

B. $-\frac{26}{9}$

C. $\frac{1}{9}$

D. 9

Question ID 51a58219

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Advanced Math	Equivalent expressions	Hard

ID: 51a58219

Which expression is equivalent to $(d-6)(8d^2-3)$?

A. $8d^3-14d^2-3d+18$

B. $8d^3-17d^2+48$

C. $8d^3-48d^2-3d+18$

D. $8d^3-51d^2+48$

Question ID af181cc6

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Advanced Math	Equivalent expressions	Hard

ID: af181cc6

The expression $90y^5 - 54y^4$ is equivalent to $ry^4(15y - 9)$, where r is a constant. What is the value of r?

Question ID 01256117

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Advanced Math	Equivalent expressions	Hard

ID: 01256117

Which of the following expressions has a factor of $x + 2b$, where b is a positive integer constant?

A. $3x^2 + 7x + 14b$

B. $3x^2 + 28x + 14b$

C. $3x^2 + 42x + 14b$

D. $3x^2 + 49x + 14b$

Question ID e4cf986e

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Advanced Math	Equivalent expressions	Hard

ID: e4cf986e

Which expression is equivalent to $\frac{42a}{k} + 42ak$, where $k > 0$?

A. $\frac{84a}{k}$

B. $\frac{84ak^2}{k}$

C. $\frac{42a(k+1)}{k}$

D. $\frac{42a(k^2+1)}{k}$

Question ID 477e2240

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Advanced Math	Equivalent expressions	Hard

ID: 477e2240

Which of the following expressions is equivalent to $8x^{10} - 8x^9 + 88x$?

A. $x(7x^{10} - 7x^9 + 87x)$

B. $x(8^{10} - 8^9 + 88)$

C. $8x(x^{10} - x^9 + 11x)$

D. $8x(x^9 - x^8 + 11)$

Question ID 4928d11a

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Advanced Math	Equivalent expressions	Hard

ID: 4928d11a

If $k - x$ is a factor of the expression $-x^2 + \frac{1}{29}nk^2$, where n and k are constants and $k > 0$, what is the value of n?

A. -29

B. $-\frac{1}{29}$

C. $\frac{1}{29}$

D. 29

Question ID 22da0031

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Advanced Math	Equivalent expressions	Hard

ID: 22da0031

$$(5x^3 - 3) - (-4x^3 + 8)$$

The given expression is equivalent to $bx^3 - 11$, where b is a constant. What is the value of b?