TEST YOUR SKILLS

TEST

How many different real numbers satisfy the equation below? $(x^{2} + 4x - 2)^{2} = (5x^{2} - 1)^{2}$ **A** 0 **B** 1 **C** 2 **D** 3 **E** 4 (USA University of South Carolina: High School Math Contest, 2003) If *a* e *b* are roots of $2\sqrt{2x+4} - 2 = x$, then ab =2 **A** 0 **B** 4 **C** -12 **D** -4 **E** 12 (USA Tennessee Mathematics Teachers Association: 39th Annual Mathematics Contest, 1995) Let f(n) = n(n + 1), where *n* is a natural number. Find a pair (a; b) such that 2f(b) + 2 = f(a) and a = b + 2. **A** (2;0) **B** (3; 1) **c** (4; 2) **D** (5; 3) **E** (6; 4) (USA Tennessee Mathematics Teachers Association: 39th Annual Mathematics Contest, 1995) How many different real numbered pairs (x; y)satisfy the system of two equations below?

 $\begin{cases} x + xy + y = -9\\ x^2 + y^2 = 17 \end{cases}$

A 6 **B** 4 **C** 3

(USA University of South Carolina: High School Math Contest, 2004)

D 2

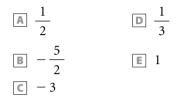
E 0

5 Solve. Don't forget to check your answers!

a) $\sqrt[3]{x-1} = 2$

b) $7a - 2 = 2\sqrt{5a - 9} + 5a$

(USA Tacoma Community College, Review for Test, 2001) [a) x = 9; b) $a = 2 \lor a = 5$] **6 TEST** Two of the roots of the equation $2x^3 - 3x^2 + px + q = 0$ are 3 and -2. The third root is:



(USA North Carolina State High School Mathematics Contest, 2004)

- **7 TEST** The hypotenuse of a right triangle has length $\sqrt{61}$ cm and the sum of the lengths of the legs is 11 cm. What is the area of this triangle?
 - A 13.5 cm²
 D 15.0 cm²
 B 14.0 cm²
 E 15.5 cm²
 C 14.5 cm²

(USA Indiana State Mathematics Contest, 2005)

8 The roots of the equation $x^2 + 4x - 5 = 0$ are also the roots of the equation

 $2x^3 + 9x^2 - 6x - 5 = 0.$

What is the third root of the second equation?

(CAN Canadian Open Mathematics Challenge, 1996)



GLOSSARY

to check: provare,	length: lunghezza
controllare	numbered pair: coppia
equation: equazione	ordinata
to forget-forgot-	root : radice, soluzione
forgotten: dimenticare	to satisfy: soddisfare
leg: lato (cateto)	to solve: risolvere