

HIGH SCHOOL ROUND ONE



You will have

INTEGRAL #1

**READY,
GET SET,...**

2:00

INTEGRAL #1

$$\int_0^1 2012^{2012} dx$$

INTEGRAL #1

$$\int_0^1 2012 x^{2012} dx$$

$$= \left[2012 \cdot \frac{x^{2013}}{2013} \right]_0^1$$

$$= \frac{2012}{2013}$$

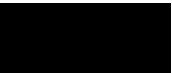
INTEGRAL #2

**READY,
GET SET,...**

2:00



INTEG



INTEGRAL #2

$$\int_0^2 \cos \frac{\pi}{2} x$$

$$= \frac{1}{\pi} \int_0^{\pi} \cos x \quad \left[\begin{array}{l} = \frac{\pi}{2} \\ = \frac{\pi}{2} \end{array} \right]$$

$$= \frac{1}{\pi} \left[\sin x \right]_0^{\pi} = \frac{1}{\pi} \left(\frac{\sqrt{2}}{2} - 0 \right)$$

$$= \frac{\sqrt{2}}{\pi}$$

INTEGRAL #3

**READY,
GET SET,...**

2:00

M

INTEGRAL #3

$$\int_0^1 (5 +) (+)$$

INTEGRAL #3

$$\int_0^1 (\sqrt{x} + 1)(\sqrt{x} + 1)$$

INTEGRAL #4

**READY,
GET SET,...**

2:00

INTEGRAL #4

$$\int_0^{\sqrt{\pi/2}} \sin(x^2) dx$$



INTEGRAL #4

$$\int_0^{\sqrt{\pi^2}} \sin(x^2)$$

$$= \frac{1}{2} \int_0^{\pi^2} \sin(x) \quad \left[\begin{array}{l} = 2 \\ = 2 \end{array} \right]$$

$$= \frac{1}{2} \left[-\cos(x) \right]_0^{\pi^2}$$

$$= \frac{1}{2}$$

INTEGRAL #5

**READY,
GET SET,...**

2:00

INTEGRAL #5

$$\int_1^2 \frac{+}{. 2}$$



INTEGRAL #6

**READY,
GET SET,...**

2:00

INTEGRAL #6

$$\int_{\pi}^{\pi/2} \frac{\cos}{1 - \cos^2}$$

INTEGRAL #6

$$\int_{\pi}^{\pi/2} \frac{\cos}{1 - \cos^2}$$

$$= \int_{\pi}^{\pi/2} \frac{\cos}{\sin^2}$$

$$= \int_{1/2}^1 \frac{1}{2} \quad \left[\begin{array}{l} = \sin \\ = \cos \end{array} \right]$$

$$= \left[-\frac{1}{\sin} \right]_{1/2}^1 = 1$$

Q H

INTEGRAL #7

**READY,
GET SET,...**

2:00

INTEGRAL #7

$$\int_0^1 (\sqrt{\quad} + \sqrt{\quad})$$

INTEGRAL #7

$$\int_0^1 (\sqrt{\quad} + \sqrt{\quad})$$

$$= \int_0^1 (\quad + \quad)$$

$$= \left[\quad + \quad \right]_0^1$$

$$= \boxed{1}$$

INTEGRAL #8

**READY,
GET SET,...**

2:00



INTEGRAL #8



INTEGRAL #8

$$\int_{\pi}^{\pi} \sec (\tan - \sec)$$

$$= \int_{\pi}^{\pi} (\sec \tan - \sec^2)$$

$$= \left[\sec - \tan \right]_{\pi}^{\pi}$$

$$= (2 - \sqrt{2}) - (\sqrt{2} - 1) = -\sqrt{2} - \sqrt{2}$$

INTEGRAL #9

**READY,
GET SET,...**

2:00

INTEGRAL #9

$$\int_0^1 \sqrt{x} (\sqrt{x} + 1)$$

INTEGRAL #9

$$\int_0^1 \sqrt{x} (\sqrt{x} + 1)$$

$$= \frac{2}{3} \int_1^2 \left[\sqrt{x} + 1 \right] dx$$

$$= \frac{2}{3} \left[\frac{2}{3} \right]_1^2$$

$$= \frac{5}{2}$$

INTEGRAL #10

**READY,
GET SET,...**

2:00

INTEGRAL #10

$$\int_1 \left(+ \frac{1}{-} \right)^2$$

INTEGRAL #11

**READY,
GET SET,...**

2:00

INTEGRAL #11

$$\int_0^{\pi/2} \cos$$



INTEGRAL #12

$$\int_{-}^1 (+) \sqrt{ + }$$

INTEGRAL #12

$$\int_{-}^1 (+) \sqrt{ + }$$

$$= \int_{-}^1 (+)^2$$

$$= \int_0^2 \left[= + = \right]$$

$$= \left[\frac{2 \sqrt{2}}{\sqrt{2}} \right]_0 = \frac{\sqrt{2}}{\sqrt{2}}$$

INTEGRAL #13

**READY,
GET SET,...**

2:00

INTEGRAL #13

$$\int_0^{\pi} (\cos - \sin)$$

INTEGRAL #13

$$\begin{aligned} & \int_0^{\pi} (\cos^2 - \sin^2) \\ &= \int_0^{\pi} (\cos^2 + \sin^2) (\cos^2 - \sin^2) \\ &= \int_0^{\pi} 1 \cdot (\cos^2 - \sin^2) = \int_0^{\pi} \cos 2 \\ &= \left[\frac{\sin 2}{2} \right]_0^{\pi} = \frac{\sqrt{\quad}}{\quad} \end{aligned}$$

INTEGRAL #14

**READY,
GET SET,...**

2:00



INTEGRAL #14

$$\int_0^1 2x^2 \cdot \sqrt{x} \, dx$$

$$= \int_0^1 120x^1 \, dx$$

$$= \left[120 \cdot \frac{x^2}{2} \right]_0^1 = \left[60x^2 \right]_0^1$$

$$= \boxed{60}$$

INTEGRAL #15

**READY,
GET SET,...**

2:00



L #15

INTEGRAL #15

$$\int_0^1 \sqrt{\quad} \quad 10 \quad 000000010 \quad 010 \quad 010 \quad 010 \quad 010000$$

THANKS FOR PLAYING

LET'S EAT!

(YOU HAVE TWO MINUTES TO FINISH YOUR FOOD)

THE FINAL ROUND BEGINS AFTER DINNER